The Business Journal of Vegetation Management July 1979/$1.25

WEEDS TREES & TURF

Grasses and Legumes for Reclamation

Wetting Agents and Their Part in Water Conservation

The Growing Use of Zoysia in Fine Turf

Zoysia to left of bluegrass at the Country Club of Missouri

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Cover: Tommy Stone, superintendent of the Country Club of Missouri, Columbia, Mo., (on left) shows a line of zoysia growth on a fairway to University of Missouri Turfgrass Specialist George Hubbell.

LETTERS

In a Rut

Though the article entitled "Geochemical Factors Affecting Plant Growth in Reclamation," in your April issue, was interesting, one basic error did appear as the caption to the photo on page 43. The photograph shows short linear clumps of vegetation growing in a pattern suggesting that the area was walked, prior to seeding, by equipment with grousers on the tracks. The caption states that the vegetative pattern indicated that "compacted earth was a better growing medium than the uncompacted." While this statement is generally inappropriate in regard to surface mine reclamation, compaction is not the variable responsible for the growth of the vegetation in the grouser marks.

When an area is tracked and then seeded, the distribution of the seed is initially uniform. During the first moderate rain, however, the distribution is radically altered. The lightweight seeds are washed downslope from each high between the grouser marks and into the adjacent local depression (grouser mark). During this process fines are also transported. These settle out in the still water accumulating in the depression and cover the seeds, generally preventing their further movement. The vegetation grows in the grouser marks, and not on the relative high spaces between, merely because that is where most of the seeds are located when they germinate. It should also be noted that the grouser marks catch water aiding the germination process and that tracking should always be conducted parallel to the slope.

Don Davison Jr.
Chief Engineering Geologist
Barnette Contractors
Wise, Virginia

The Total Picture

I read with interest your editorial in your May issue of WT&T. First, we do appreciate the compliment you paid our magazine ASPA "Turf News" and the strides we have made with it.

In contemplating your other comments, I realize that what you say is true in that we sometimes get so deeply involved in our own association activities and its publications that we do forget the other elements of the press which over the years have been extremely cooperative and interested in the "total picture" where those of us in our own special interest associations obviously are concentrating on our specialities. You have a valid point and we pledge that we'll make a conscientious effort at this end to try to funnel more information to you that might be of general interest to the total spectrum of the Green Industry.

Thanks for your interest and while we are proud of the growth of organizations such as ASPA, we likewise recognize the contribution that publications such as yours have made and are making industry wide.

Bob Garey, Executive Director
American Sod Producers Association

Right On to Education Articles

Thank you for running my article on our training programs at Lake City Community College.

Articles explaining horticulture training programs at various schools across the country provide an excellent means of informing employers in the horticulture industry where they can go for qualified employees. Such articles also help young people who are interested in horticulture to select the program that best meets their needs. As a result of the article, we have already received several requests from potential students and employers about our programs.

"Weeds Trees and Turf" is doing an excellent job of covering the various aspects of the green industry. I appreciate your sincere concern for environmental horticulture education.

John Piersol, Instructor
Landscape Design and Sales
Lake City Community College
Lake City, Florida

In the May issue of *Weeds Trees and Turf* you ran a feature article on technical education programs in horticulture. The Ornamental Nursery Management program at Penn State University trains technicians to serve the nursery industry principally in the mid-Atlantic region. Founded in 1957, this is a well established, highly respected program. Although it does not offer a degree, it does utilize the facilities and faculty associated with our baccalaureate program. If you feel information about this would be appropriate for your magazine, I would be happy to further describe it for possible publication in Weeds Trees and Turf.

David J. Beattie
Assistant Professor of Ornamental Horticulture

The tradition and respect for programs from Penn State University almost speak for themselves. Both turf and tree research has strong roots in Pennsylvania. We'd be proud to feature your program in an upcoming issue. The Editor.

Covering the turf

It was brought to my attention by my Extension Agent for Oakland County, Greg Patchan, that your magazine is of fine quality and that one of your latest issues (I believe May or June '79) addressed itself to many varieties of ground covers. This is an area of extreme interest to me, and I would appreciate your sending me this back issue. I would be more than happy to pay either prior to delivery or upon delivery. Also, please enclose an application for subscription.

Joe Halfmann
Landscape Contractor
Michigan Dept. of Agriculture

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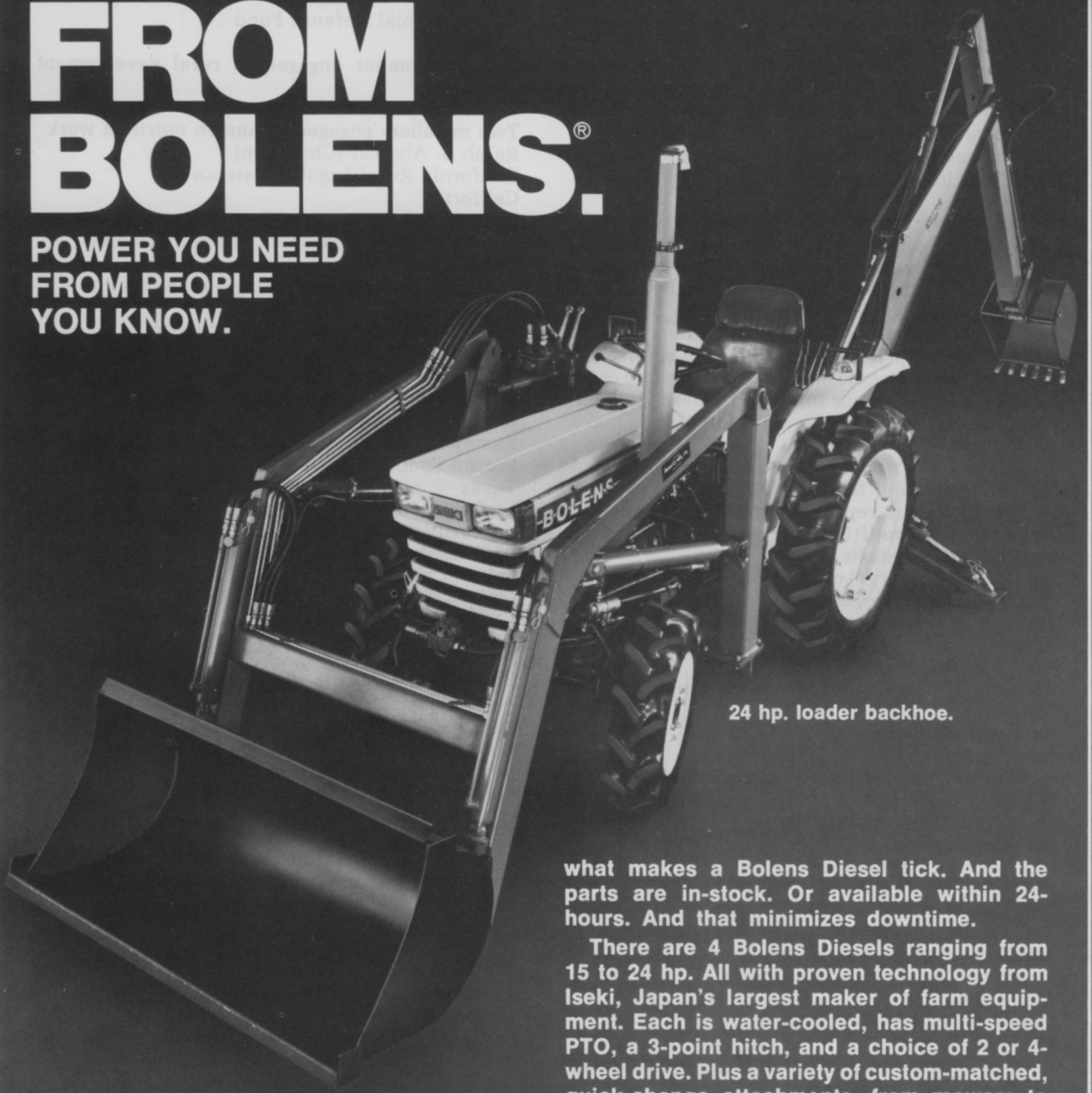

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VIEWPOINT

Bruce F. Shank, Editor

Page two as Paul Harvey would say. Last month I talked about a predicament with agricultural extension services, the reduction of these services, and a lack of representation for turf and tree interests in a board chosen to advise the President and the Secretary of Agriculture on budget cuts.

This subject is worthy of every inch of space I can give it in this magazine until something is done about it.

To review last month's Viewpoint: extension services are being steadily trimmed each year with further cuts likely under fiscal 1980's budget; a board named the National Agricultural Research and Extension Users Advisory Board has been created to advise the President and Secretary of Agriculture on priorities for extension services to help budget cutting; no one from a turf or tree organization represents our interests in these vital discussions; and we have only until July 10th to make an impact.

To show you who is represented, here is a list of the 21 members of the board:

— Four members representing producers of agricultural commodities, forest products, and aquacultural products
Mr. William Henry Anthony, Sr.
Alice Sidney Farms, Arkansas
Mrs. Margaret Bucher Eklund
Montana
Mr. Gilbert L. Oswald
Simpson Timber Company, Washington
Robert Lee Scarborough
Center State Farms, Inc.
South Carolina

— Four members representing consumer interests
Ms. Harriet Barlow
Institute of Local Self-Reliance
Washington, D.C.
Ms. Barbara Friedlander
Office of School Food Services
New York
Ms. Shirley Goldinger
Department of Consumer Affairs
County of Los Angeles, California
Ms. Ellen Haas
Consumer Federation of America
Washington, D.C.

— Two members representing farm suppliers and food and fiber processors
Mr. J. G. Tvedt
Farmers Union Central Exchange, Minnesota
Raymond T. Floate
Michigan Fruit Canners, Michigan

—Two members representing food and marketing interests
Robert Archer
Illinois Department of Agriculture
Illinois
J. M. Bowers
Jersey Fruit Cooperative Association, Inc.
New Jersey

— Two members representing environmental interests
Wayne R. Z. Willey
Environmental Defense Fund
California

— One member engaged in rural development work
Vacant at present

Two members engaged in human nutrition work
Ralph S. Abascal (Chairman)
California Rural Legal Assistance
California
Janet B. Schwartz (Vice-Chairman)
Massachusetts Department of Public Health
Massachusetts

— One member representing animal health
John A. Ragan
Tennessee Department of Agriculture
Tennessee

— One member engaged in transportation of food and agricultural products to domestic and foreign markets
Stoney M. Stubbs
Frozen Food Express, Inc.
Texas

— One member representing labor organizations primarily concerned with the production, processing, distribution, or transportation of food and agricultural products
Joan M. Schroeder
Retail Clerks International Union
Washington, D.C.

Recognize anyone who can help us? I sure don't.

The mandated purpose of the board is to represent the interests and views of the users of agricultural research and extension in Federal policy and planning processes at the highest level. It was created as a result of the 1977 Farm Bill.

Somehow, forestry and orchard farmers are the only two recognized industries that relate to the Green Industry at all! How did we get overlooked and are we going to let this continue until every extension service to the turf and tree industries is cut from the budget?

The board must submit two reports, one in March and one in October. The March report goes to Congress and the President, The October report goes to the Secretary of Agriculture. The first report is out and without turf and tree input. The second will be the subject of a meeting in July. We can't miss both.

Make your own decision. What have extension personnel done for you? What part do they play in regional organizations? Who better represents and recommends landscape and arborist services than the extension agent? Would you miss their service and would you like to see them out of work?

Think about it, but don't take long. Board input can be made immediately to:
James Meyers, Executive Secretary
National Agricultural Research and
Extension Users Advisory Board
Science and Education Administration
USDA
Room 349-A, Administration Building
Washington, D.C. 20250

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GREEN INDUSTRY NEWS

Meeting held to form national lawn care association

The lawn care industry got a shot in the arm last month when 42 persons representing 25 lawn care companies across the country met at a Holiday Inn in Fort Mitchell, Kentucky and took the first steps towards organizing a national lawn care association.

The companies in attendance collectively kicked in a total of $15,000 of seed money to get the association off the ground.

Jerry Faulring, of Hydro Lawn, Gaithersburg, Md., was unanimously elected president by those lawn care businessmen in attendance. Doug Baker, of Leisure Lawn, Inc., West Carrollton, Ohio, was elected vice president. John Latting, of Lawn Groomer, Bloomington, Ill. was elected secretary-treasurer.

Four major committees were formed and consist of members of the board of directors and other volunteers from among those who attended the meeting. The committees formed are: Membership/Dues — to decide on classifications of members and a dues structure; Bylaws — to draft a proposed set of bylaws for the organization; Name and Incorporation — to decide on a name and to go through legal stages of incorporation; and Management — to decide on how the organization will be managed on a day-to-day basis.

Those in attendance hired a Chicago association management firm — Bostrom & Associates — on a 90-day basis to aid the organization in legal incorporation and other start-up tasks. Although no final name for the organization has been chosen, all preliminary work will done under the name of the Professional Lawn Care Association.

Broad goals discussed by those in attendance include: serving as a liaison between the lawn care industry and federal, state and local governments; organization of training programs for staff and management of lawn care companies across the country; drafting a code of lawn care standards/ethics; work together with other green industry associations for mutual benefit; institute an annual national lawn care conference and trade show.

EQUIPMENT

Toro to build own engines in future

The Toro Co. plans to spend more than $15 million over the next two years to build two new plants and expand a third, which will also get them into the engine making business.

The company will begin production of its own two-cycle engine, build a new plant for the assembly of consumer products, and add much-needed production capacity to its fast-growing irrigation operation. Toro will continue to buy as many engines as it has from the U.S. manufacturers who supply them.

Toro will gain design flexibility by making its own engines. The new engines are being developed with the idea that their design will closely integrate with the products they run, McLaughlin says.

Toro plans to invest approximately $6 million in Willmar, Minn., to begin manufacturing gasoline engines for snowthrowers, flexible line trimmers, and other yard care equipment. Production is expected to begin at the Willmar plant no later than December 1980.

Expansion has already begun at Toro's Irrigation plant in Riverside, Calif., where the company plans to spend $3.4 million on additional factory, office, and warehouse space.

Toro has grown very rapidly in recent years with sales in fiscal 1978 advancing 41 percent to $227 million. McLaughlin says sales in fiscal 1979 are expected to surpass $350 million.

EDUCATION

Research may probe water needs for grass

The Toro Co. is contemplating a research program through the University of California at Riverside to study the water requirements of the various types of turf grasses.

According to Thomas J. Schlitz, director of education and technical services for The Irrigation Assoc., there are no reliable figures available on the requirements of turf grasses, and this information would probably save millions of gallons of water in the state of California each year.

NURSERY

Nurserymen mix shows in Atlanta in July

The American Association of Nurserymen is combining its annual convention with the horticultural trade show of the Southern Nurserymen's Association for the first time.

Nine other national associations will be meeting at the same time, July 28 through August 1, at the Peachtree Plaza Hotel in Atlanta, Ga. Various committee meetings, regional caucuses, legislative and research conferences, and state meetings will be held there along with educational sessions, youth activities, and social functions.

The SNA Trade Show has expanded to capacity this year and will offer 540 booths displaying all variety of plant material and nursery supplies. There will be five general sessions, one each day of the convention, covering topics from developments in the nursery industry to functions of garden center graphics.

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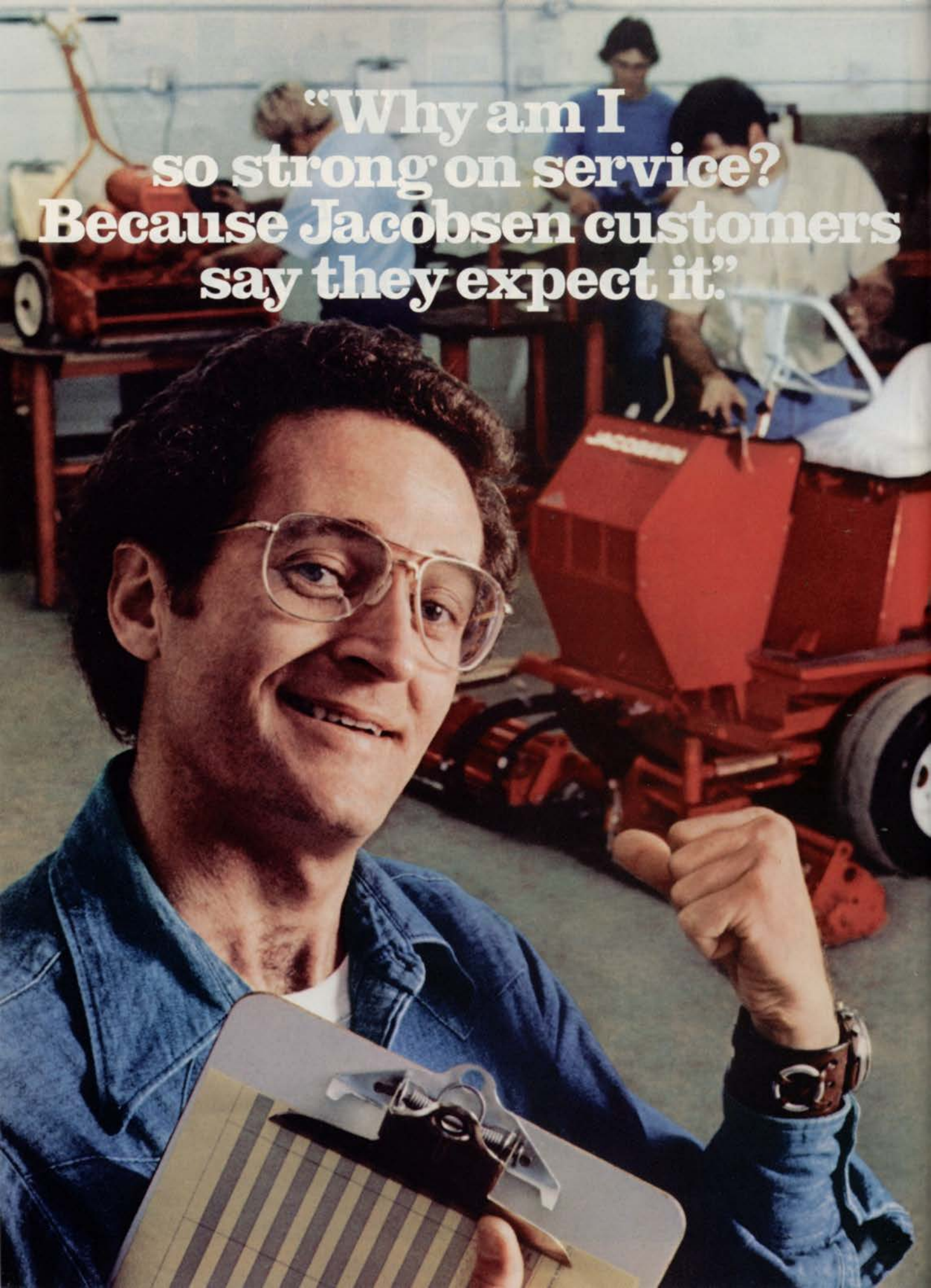
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Not only that, Jacobsen distributors hold field seminars and offer training to those customers who handle their own routine maintenance.

Fast service. Done by professionals who are thoroughly trained.

That's what you said you expect.

And that's why we feel that the sale is really completed in the service department.

Next time you get a chance, ask your Jacobsen distributor to tell you about his service philosophy.

The more you listen to what he has to say, the more you'll know he's been listening to you.

We hear you.

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FERTILIZER

Estech, Inc. acquires some Agrico interests

Estech, Inc., parent company of Swift, has acquired some of the Florida retail and agricultural fertilizer interests of Agrico Chemical Co., said Joseph P. Sullivan, president and chief executive officer of Estech.

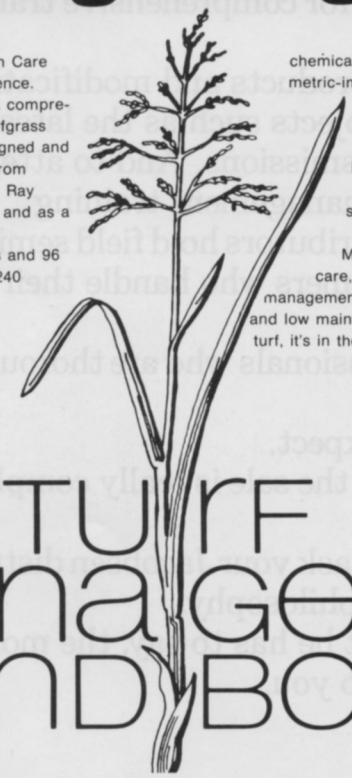
The Agrico fertilizer mixing plants at Tampa and Fort Pierce were part of the acquisitions as well as the GroTone brand of home fertilizer distributed in Florida and some other southern states.

Sullivan said the mixing plants will be operated by Swift Agricultural Chemicals Corp., subsidiary of Estech that operates phosphate mines in Florida, and manufactures the Vigoro brand line of retail fertilizers, insecticides, and herbicides.

Agrico Chemical Co. is a subsidiary of the Williams Cos., Tulsa, Oklahoma.

Finally, An Aid For Teaching Turfgrass

Superintendents, Contractors, Lawn Care Managers, New, On-the-Job Reference. The Turf Managers' Handbook is a comprehensive, organized approach to turfgrass science and care. It has been designed and written by leading turf specialists from Purdue, Dr. William Daniel and Dr. Ray Freeborg, for on-the-job reference and as a text for students.
The book contains 150 illustrations and 96 color photographs. Data includes 240 tables and forms. Included are specifications for rootzones, employment, calculations for chemical applications, and extensive metric-imperial conversion. Business and technical aspects of turfgrass management are covered in this 424-page Planning, purchasing, hiring, construction, and plant selection are put together for easy on-the-job reference. Markets covered include lawn care, sod production, golf course management, cemeteries, athletic fields, and low maintenance areas. If it concerns turf, it's in the Turf Managers' Handbook.



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RECLAMATION

Gulf States Paper to distribute Enkamat

The Erosion Control Systems Group of Gulf States Paper Corp. will distribute Enkamat, a new erosion control product, and Stabilenka, a civil engineering filter fabirc, announced J. C. Webb, general manager of new ventures for American Enka Co. and Walter Simons, vice-president of Gulf States. American Enca Co. makes both products.

Enkamat is a flexible, three-dimensional mat of open construction made from heavy nylon monofilaments fused at their intersections. In soil erosion control, Enkamat installs by staking it down over the soil base and burying the edges. The mat fills with soil and sedimentation and grass grows to form a surface capable of withstanding high water velocities.

It is intended for any public or private project which requires permanent surface erosion control at an economical price. This includes ditches, slopes, and waterways.

Enkamat has been used by highway departments in several states to stabilize both natural and artificial embankments, steep excavated slopes, bridge and viaduct aprons, and drainage ditches. It provides an alternative to concrete, asphalt, and rip rap in such applications.

Stabilenka is a family of nonwoven polyester filter fabrics developed specifically for soil engineering purposes.

TREES

Shade tree rated, results available

Scientists at the Ohio Agricultural Research and Development Center (OARDC) have announced the names of trees which currently rate highest for planting along city streets.

Dr. T. D. Sydnor, OARDC horticulturist and head of the Ohio Shade Tree Project, says his list of the so-

called "top ten" trees is extremely small, considering that 130 types of trees are under evaluation. It represents an average opinion of the evaluation panel regarding the visual impact of the various plants and their suitability as street trees.

The top rated trees include Bloodgood London planetree (Platanus x acerifolia 'Bloodgood'), Red Sunset red maple (Acer rubrum 'Red Sunset'), Moraine sweetgum (Liquidambar styraciflua 'Moraine'), common or European linden (Tilia x europaea), Greenspire Littleleaf linden (Tilia cordata 'Greenspire'), Select callery pear (Pyrus calleryana 'Select'), Korean callery pear (Pyrus calleryana 'Faureri'), hedge maple (Acer campestre), riverbirch (Betual nigra), and upright Europena hornbeam (Carpinus betulus 'Fastigiata').

Sydnor says that these plants will not necessarily be the proper ones for a given location. Some people may want their trees to act as a windbreak for the house or to help lower heating costs in the winter and air conditioning costs in the summer. Others may want to attract wildlife, grow their own fruit, or have display flowers.

Characteristics monitored at the Wooster site include: disease and insect tolerance, environmental stress tolerance, growth habit, rate of growth, crotch angles, and wood strength. Sydnor says information and data from researchers, observers, and nurserymen at urban sites around the state are also utilized in determining the shade tree rankings.

TURF

Turf supplier named businessman of year

Leroy F. Strebel, president of Gulf Shore Turf Supply Company, was honored by the Jacksonville dis trict office of the Small Business Administration as its "Small Business Person of the Year."

In making the announcement, Douglas E. McAllister, SBA district director in Jacksonville, said, "In only five years Mr. Strebel transformed a $400,000 a year loser into a $5 million a year success. And he did it with flair, imagination, enthusiasm, and integrity — virtues which are held in high esteem by the business community and SBA."

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LANDSCAPE

Aesthetic award for retirement community

Rossmoor Leisure World, Laguna Hills, has been named the "Professional Landscape of the Year" by the California Landscape & Irrigation Council, a trade association of union-affiliated landscape and irrigation contractors who specialize in commercial and industrial projects.

According to CLIC President Klaus W. Ahlers, "Rossmoor Leisure World is probably the largest continuing landscaping project in the United States. To date, the project covers 1,540 acres of landscaping, including 55,000 tress, 800,000 shrubs, approximately 800 acres of sodded lawn, and 4,000,000 flowers and ground plants.

The project claims to have the largest electronically-controlled sprinkler system in the world, with 250,000 sprinkler heads, 13,000 automatic valves, 800 clocks, and underground piping installations that cover millions of feet in length.

AN OPEN MESSAGE TO LAWN AND GARDEN MANUFACTURERS

From C. Edward Scofield, Executive Vice President, RA-PID-GRO Corporation

"I've helped the lawn and garden industry to grow to an $11 billion giant! It has been my privilege to frequently be a part of some of the great new changes and developments. I've also experienced my share of disappointments and mistakes. Without strong trade organizations, dedicated pioneers and competent leaders our industry would only be a fraction of what it is today. Your business would still be struggling, your outlook uncertain, were it not for the great work done by many trade organizations. Now we need one strong, overall lawn and garden association to knit manufacturers, producers and growers into a cohesive group. As President of LAGMA, I promise any time and money you invest in this association will pay off handsomely."

Help develop and support a strong, effective trade association. For information on membership and benefits for your firm, ask Ed Scofield or contact:

LAGMA

THE LAWN AND GARDEN MANUFACTURERS ASSOCIATION
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APPOINTMENT

Collins awarded new appointments

William H. Collins, staff horticulturist for American Garden-Cole, has been named by Secretary of Agriculture Bob Bergland to the Advisory Council of the National Arboretum in Washington, D.C.

Collins has also been appointed to the advisory board of the new Chadwick Arboretum in Columbus, Ohio. He has worked 18 years for American Garden-Cole, the eastern division of American Garden Products, Inc.

NURSERY

Montreal to host international garden show

Both North American and European horticulturists will competitively display their plants on the Ile Notre Dame and the site of the 1976 Olympics in Montreal in May through September, 1980.

Both an indoor display lasting nearly two weeks and an outdoor display lasting three months help make this international event a first of its kind.

Interested persons and growers should contact "Les Floralies internationales de Montreal, Commissaire general, 360, rue St-Jacques, suite 310, Montreal, Quebec, Canada, H2Y 1P5.

A complete range of cultivated European ornamental plants including trees, shrubs, conifers, roses, annuals and perennials will be among the displays. Indoor plants will be featured at the Olympic Velodrome May 17 to 29. Outdoor displays will be featured on 11e Notre Dame May 31 to September 1, 1980.

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KEYS TO MANAGING ZOYSIA OFFERED BY MISSOURI'S DUNN

Text and photos by George L. Zeis

Feisty Harry S. Truman is credited with making the now famous statement, "If it gets too hot in the kitchen, it is time to get out."

Using editorial prerogative, we'll turn that statement around somewhat and say that many of the presentday turfgrasses such as bluegrass, fescue, bermuda and bentgrass, just to name a few, have been having difficulty in standing up to the "heat" of wear and tear on golf courses.

Dr. John H. Dunn, Professor of Horticulture at the University of Missouri, Columbia, Mo. has great expectations for another turfgrass that can stand the heat and beating on golf courses, particularly those courses south of a line roughly drawn from Washington, D.C., through Cincinnati, St. Louis, Kansas City and on to Los Angeles. It is called Zoysia.

"Although Zoysia will have some success in growing north of this transition line," Dr. Dunn commented, "it must be kept in mind that this turf grass is best suited for warmer climates."

Zoysia as a fairway turf is probably second only to bluegrass in Missouri. It is a native of eastern Asia and is named after Karl Von Zois, an Austrian botanist.

Actually, there are three groups of Zoysia. The Japonica group came from North Korea and Manchuria, according to Dr. Dunn, and has a fair tolerance for colder weather as compared to *zoysia matrella* or *zoysia tenuifolia*. Approximately 95 percent of the Japonica group is planted in the transition zone area.

Frank N. Meyer, a United States Department of Agriculture researcher, is credited with much of the basic development of *Zoysia japonica* having started this work in 1906. The Meyer variety is a dense, hardy selection from japonica seedings developed at Beltsville, Maryland.

With the work that Meyer had done as far back as 1906, it is a fair question to ask why it has taken so long for zoysia to catch on. There are several major reasons. Zoysia is a very slow growing turf that can best be planted vegetatively into established fairways by sprigging, plugging, strip-sodding, solid sodding or more recently by broadcasting of stolons on the surface. And up to now, zoysia has required a lot of hard work to plant.

Meyer Zoysia has been the most promising zoysia to work with in the transition zone. Although a slow grower, this turfgrass has a number of assets including: 1) resists crabgrass and other weeds; 2) grows well during the heat of summer; 3) it is

With proper management, zoysia gives excellent growth on home lawns, even in shaded areas.

drought tolerant and needs less irrigation than most turfgrasses; 4) it is very resistant to wear.

The disadvantages of Meyer Zoysia would include: 1) loss of its green color in the fall after the first few killing frosts (some do not call the browning a disadvantage); 2) dormant zoysia will be invaded by weeds; 3) it will take one full year to become fully established as a sod in Southern Florida and usually up to three years in the northern areas.

Zoysia is best started in spring or early summer to benefit from the longest period of warm weather. Since vegetative prepropagation is the best way to go with zoysia, sprigs or stolons must be planted live, usually having three nodes. Part of the sprig should be slightly under the ground surface and the other part exposed.

A relatively new approach for sprig planting was made by Tommy Stone, Superintendent of the County Club of Missouri, Columbia, Missouri. In 1972, on their newly developed golf course, Stone stripped the fairways clean of all vegetation. Then, using a manure spreader, 300 bushel of stolons per acre were spread over the fairways.

The sprigs were watered immediately after they had been spread on the ground. Stone maintains that watering is critical at this stage of planting with sprigs. For those following this method of planting, watering immediately is essential.

The cost of establishing zoysia on this golf course in 1972 including driving range, tees and fairways, was approximately $15,000. A similar project today would cost much more.

Dr. Dunn advises that if the broadcast method is used to establish zoysia, some implement such as a disk be used to establish the roots of the stolon in the ground. Dunn advises that the sprigs should be planted when they have a good growth — again, late spring or early summer.

"Plugging" zoysia has been a common practice up to now. And this may well be one of the major reasons why golf course operators or homeowners have shied away from this turfgrass. For quicker growing, Dunn points out, the land should be cleared of other vegetation. And since this grass takes a period of some three years to get well established in the transition zone, few homeowners want to put the necessary effort forth to have zoysia lawns.

So far as golf operations are concerned, strip-sodding and plugging have been the primary methods of introducing zoysia into fairways. Solid sodding has been used rather extensively in some areas but it is not advised for complete fairways because of the relatively high costs. Strip sodding should be done from six to twelve inches apart.

Under good growing conditions zoysia will give good spread within a period of three years. However, quickest spreading results from planting in a well prepared, well fertilized seed bed. If the soil cannot be sterilized, weed growth can be reduced by the use of herbicides and hand weeding. Atrazine and simazine are two herbicides that have given good crabgrass control as well as controlling other perennials. Dr. Dunn suggests using herbicides as pre-emergents.

The developing turf should be well fertilized, according to Dr. Dunn, using from 8 to 10 pounds of actual nitrogen per 1,000 square feet with the applications being made during the summer months and until mid-August. The soil should also contain a fairly high level of phosphorus and potash. Soil pH should be about 6.5. Discontinuing fertilization in mid-August in the transition zone is to allow the grass to harden for the winter months.

Dr. John Dunn inspects a plug of zoysia removed from an experimental plot.

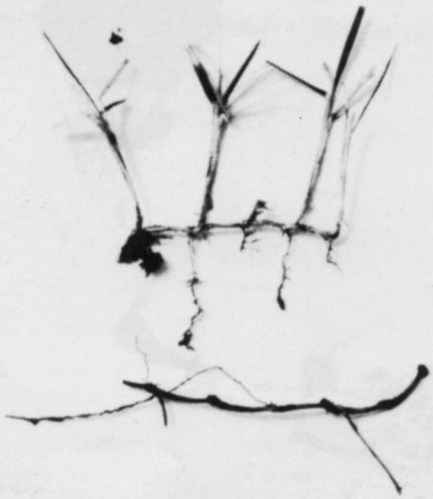
Weed control practices should be followed during the summer months to prevent the growing of other grasses. The University of Missouri researchers have used 2,4-D for broadleaf control and several pre-emergence herbicides for crabgrass control in newly planted Meyer zoysia with good success. From the work done at Columbia, it appears that zoysia turf can become well established after two summers.

At the Missouri Lawn and Turf Conference, held in Columbia in 1977, Mel Anderson, manager of a country club in Lawrence, Kansas related his experience in planting zoysia in small areas. "The method I used with small areas," Anderson commented, "was to drag the stolons up with a Rogers verticutter, get them out on the ground and distribute them with a manure spreader.

"On the last small areas," he continued, "I took the zoysia, cut it out with a verticut machine, and, by the same method, prepared the area. I set the blade of a mower as low as I could, scalped the turf and swept the areas. Then I repeated this procedure, getting as close to the soil as I possibly could.

"Next, I spread the stolons, without top-dressing, let the stolons lie on the surface and watered for about eight days."

Anderson concluded with these remarks: "I would say that our success was better than any other methods I had ever used to plant zoysia. We



Plugging is being replaced by sprigging or stolonizing. Structure of zoysia (top) makes for dense, weed resistant turf. Close-up of plug (bottom) shows density and healthy root system.

had very little desiccation and in the period of a year had a pretty well established turf."

Good management is a key element in the establishing of zoysia as a turf and to maintain it for the best results during its life span. This turfgrass has lasted as long as 20 years.

Management practices which pay off in getting the most out of a zoysia turf after it has become established would include:

1) After becoming well established, zoysia needs relatively small amounts of nitrogen fertilizer. Two pounds of nitrogen per year per 1,000 square feet is usually sufficient. Maintain moderate to high levels of phosphorous and potash. This may amount to about 200 pounds per acre but will vary from area to area.
2) Once established, and with watchful attention to fertilization, zoysias slow growth become a virtue. Even then Dr. Dunn suggests mowing two to three times a week depending on growing conditions. There is usually less thatching where more frequent mowings are made.
3) No turfgrass makes a thicker, more resilient carpet than does zoysia. But there are some drawbacks, too. Such durability and tightness tend to build thatch in time. Some plantings may become so tight that water runs off as from a roof. Watering, under such conditions, becomes difficult. The first evidence of lack of moisture is a browning appearance.
4) To help prevent tightness of zoysia topgrowth, thatch removal must be done periodically. How often this has to be done depends to considerable extent on previous management practices. De-thatching of zoysia usually has to be started the third or fourth year after planting, according to Dr. Dunn. It may become necessary to open the surface of the turf every few years after the grass has become established.
5) Use a reel type mower and cut at a height of from one-half to one inch. Avoid scalping as this may set the growth back and give an uneven appearance.
6) While zoysia has no serious disease problems, dollar spot and brown patch are sometimes found. Both these diseases respond well to fungicide treatment.
7) There may be some billbug damage but apparently this insect has not, up to now, posed any great threat to this turfgrass.

While most attention in this discussion has related to the use of zoysia on golf courses, the use of this grass also has considerable merit with the homeowner as well. But several factors have to be kept in mind when being used as a lawn grass.

As is true with golf course planting, best establishment takes place on the home lawn when the ground has been completely cleared of other plant growth. Not too many homeowners are satisfied with going through all this trouble and expense.

Another problem with zoysia for the homeowner has been the amount of work needed to establish such a lawn. The conventional way has been by plugging. This is a back breaking job. It also takes a longer time to establish a zoysia lawn this way because of competition with other plant growth.

Too much shade can also be another drawback to get the best possible growth of zoysia. Most home lawns are usually well dotted with trees and extra care and attention is needed to keep this turfgrass growing properly.

There may also be some objection to the browning of zoysia too early in the fall, particularly in the transition area. But beauty is in the eyes of the beholder. Some people think that the golden brown color of zoysia during the late fall and winter months is beautiful — and they may well have a good talking point. **WTT**

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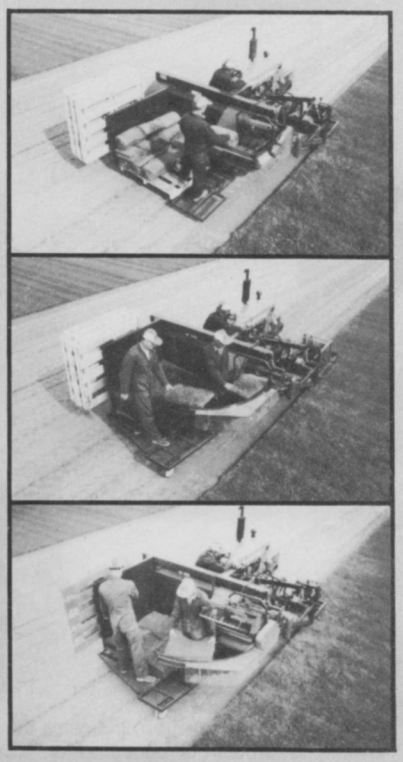

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ANALYZING ENGINE AILMENTS FOR PREVENTION AND CORRECTION

by Paul Scholten, Service Manager, Kohler Co.

Valve stem erosion (top) indicates the fuel mixture is too lean or condensation inside the engine. Damage to entire circumference of the valve face (bottom) is caused by insufficient valve clearance.

Too often a mechanic will pull an ailing engine from a piece of equipment, tear it down, rebuild it, and put it back into service without really finding out what went wrong with the engine in the first place.

What I would like to do is outline an approach that will help you determine what went wrong. With that knowledge, you can take steps in your regular maintenance program to prevent future problems and also eliminate some of the causes of premature engine wear and increase engine life.

Start with a notebook in which you can jot down the condition of parts as you find them. Observing the condition of engine components is the key to analyzing engine troubles. And keep in mind at all times that dirt, improper lubrication, and excessive heat are three of the most frequent causes of engine problems.

Do not begin by cleaning up the engine and tearing it down. You'll destroy a lot of valuable evidence that way.

Instead, start by checking for any accumulation of dirt and grit on the engine block and cooling fins. Dirt on the engine block, and especially in the fins can be a cause of heat build up which can lead to many other problems. Also, dirt on the engine increases the opportunities for dirt to get into the engine. If dirt accumulation is heavy, make a note to include a brief cleaning of the engine in your preventive maintenance schedule.

Next, examine the engine for any obvious oil leaks and make note of them. When you drain the oil, save it and measure it. From this you can tell if the engine had been running with too little oil. Too little oil, of course, means poor lubrication and ultimately damage to the engine.

Examine the condition of the oil. Is it thick and gritty? If so, review your maintenance schedule to be sure that you are changing the oil at proper intervals. Also, check to see if there is any foreign matter or chunks of dirt or metal in the oil.

Carefully examine the folds of the oil filter element to determine if there are any pieces of grit or metal trapped there. Debris in the oil can be a source of severe engine damage.

The next step is to examine the air cleaner assembly. Check the fit. Is the assembly loose or are there signs of damage? Remove the air cleaner element and inspect it carefully by holding a bare light bulb inside of it. You should be able to see light coming through the paper element. Is the element dirty, damaged, or plugged? A very dirty or plugged air cleaner element may mean that enough air was not getting through to the carburetor, and it may also mean that dirt was getting into the engine. Remember, dirt in the engine can ruin an engine in short order.

Also, carefully examine the air cleaner for openings at the edge of the paper and other indications that the element may have been defective.

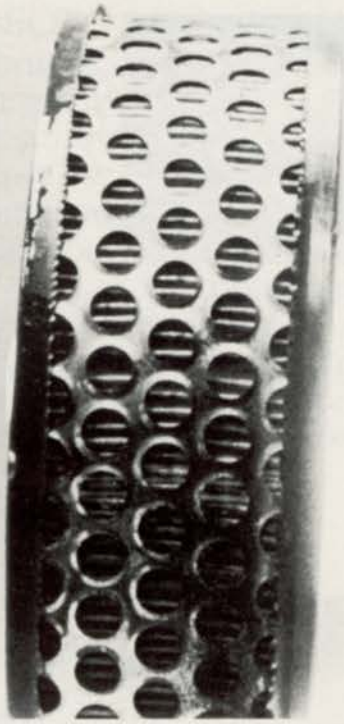
If you discover defects or troubles with the air cleaner, make sure that your preventive maintenance schedule includes a careful examination of the air cleaner in the future.

Now look down the carburetor throat. Again, check to see if somehow dirt had gotten past the air cleaner. Make a note of the deposits you find there.

This is the point at which you can finally steam clean the engine and begin actual teardown. Throughout the disassembly of the engine you should continue to make notes on the condition of the engine components as you find them. Everything should be examined for cracks, deposits, or other signs of damage that may have occurred and that may give you some clue to what has been happening inside your engine.

Your next step is to remove the carburetor and check the intake port for signs of dirt, poor seal, or perhaps a damaged gasket. When the cylinder head is off, examine it carefully, noting the amount of

Continues on page 43



Air cleaner is easily inspected by shining a light through the center.

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IRRIGATION DIVISION

RECLAMATION GRASS SELECTION DEPENDS ON COMBINATIONS, COST

The key to success in establishing grass cover in land reclamation is utilizing a mixture of hardy species according to research recently completed in a cooperative project between Lofts Pedigreed Seed Co. of Bound Brook, NJ, and Jacklin Seed Co., of Post Falls, ID.

The project, directed by Lofts Director of Research Richard Hurley, studied nearly 75 different species of grasses and legumes in order to select four mixtures for reclamation.

"Our research uncovered many desirable species which should be utilized in some reclamation situations, but because of limited or no commercially available seed sources, they were omitted from our final mixtures," Hurley said. "Although these species can be purchased, they are not widely utilized in reclamation mixtures because of high seed cost and/or difficulty in providing plant establishment.

"Specially developed mixtures may be required for some areas of the U.S., especially the arid Midwest, West and portions of the Rocky Mountains, where varying elevations and slopes create thousands of small microclimates. Items in a seed mixture which should be considered are seed size or number of seeds per pound, seedling vigor and rate of establishment. Percent of seed included in a mixture may be misleading," Hurley warns.

When seeding any of the species available, they should not be seeded alone. As a general guideline, a minimum of three species should be included in any seed mixture."

As a result of this research, Lofts and Jacklin are now marketing four mixtures for reclamation under the name Pinto.

Below is a master list containing most of the desirable species of grasses and legumes used on reclamation and revegetation sites across the United States. When seeding any of these species, they should not be seeded alone. As a general guideline, a minimum of three species should be included in any seed mixture for revegetation purposes. "Many species which we would like to utilize from a standpoint of performance, are either too expensive on a cost per acre basis for most general recommendation situations, or are presently not in commercial production," says Hurley.

Dry Acid Mixture
- Tall Fescue
- "Oahe" Intermediate Wheatgrass
- Sheep Fescue
- "Reubens" Canada Bluegrass
- "Troy" Kentucky Bluegrass

Moist Acid Mixture
- Tall Fescue
- "Lynn" Perennial Ryegrass
- "Reubens" Canada Bluegrass
- "Troy" Kentucky Bluegrass
- "Sabre" Poa trivialis
- White Clover
- Alsike Clover

Dry Alkaline Mixture
- Tall Fescue
- Russian Wild Ryegrass
- Crested Wheatgrass
- Sheep Fescue
- "Lynn" Perennial Ryegrass
- "Lemmons" Alkali Grass

Moist Alkaline Mixture
- Tall Fescue
- Slender Wheatgrass
- "Lynn" Perennial Ryegrass
- "Lemmons" Alkali Grass
- "Sabre" Poa trivialis

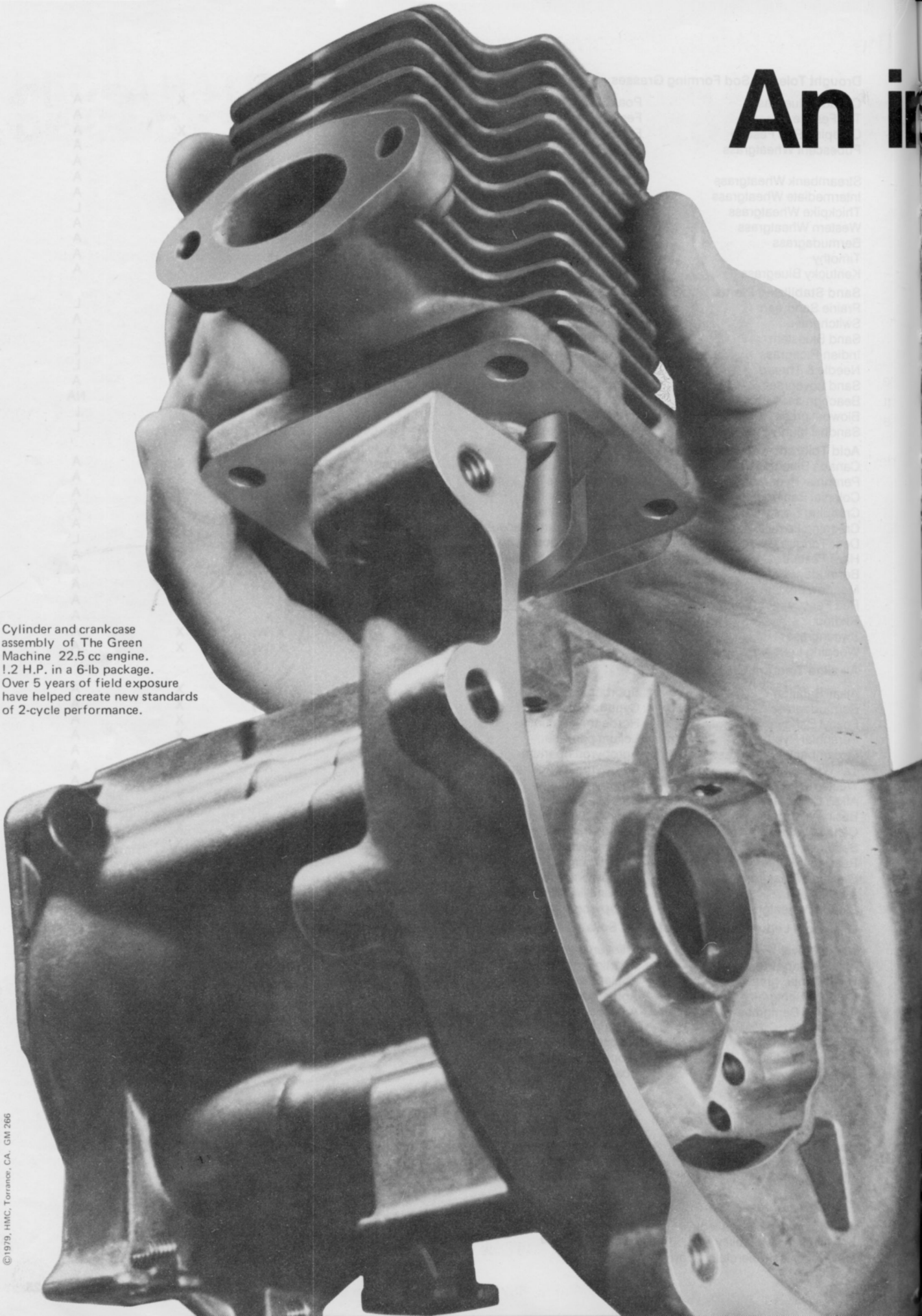
Species	Scientific Name	Variety	East to Midwest States	Midwest to Western States	Species Availability
Drought Tolerant Bunchgrass					
Beardless Wheatgrass	Agropyron inerme	"Whitmar"		X	*A
Big Bluegrass	Poa ampla	"Sherman"		X	A
Bluebunch Wheatgrass	Agropyron spicatum		X	X	L
Hard Fescue	Festuca ovina, var. duriuscula	"Durar"	X	X	A
Indian Ricegrass	Oryzopsis hymenoides			X	L
Needle and Thread	Stipa comata			X	L
Russian Wildrye	Elymus junceus	"Sawki"		X	A
Sand Dropseed	Sporobolus cryptandrus		X	X	L
Siberian Wheatgrass	Agropyron sibiricum			X	A
Slender Wheatgrass	Agropyron trachycaulum		X	X	A
Weeping Lovegrass	Eragrostis curvula		X (W)	X	A
Sheep Fescue	Festuca ovina		X	X	A

Drought Tolerant Sod Forming Grasses					
Canada Bluegrass	Poa Compressa	"Rubens"	X	X	A
Tall Fescue	Festuca arundinacea		X		A
Creeping Red Fescue	Festuca rubra			X	A
Pubescent Wheatgrass	Agropyron trichophorum	"Greenleaf" or		X	A
		"Topar"	X	X	A
Streambank Wheatgrass	Agropyron riparium	"Sodar"		X	A
Intermediate Wheatgrass	Agropyron intermedium	"Oahe"		X	A
Thickpike Wheatgrass	Agropyron dasystachyum			X	L
Western Wheatgrass	Agropyron smithii		X	X	A
Bermudagrass	Cynodon dactylon		X (W)	X	A
Timothy	Phleum pratense		X	X	A
Kentucky Bluegrass	Poa pratensis		X	X	A
Sand Stabilizing Plants					
Prairie Sandreed	Calamovilfa longifolia			X	L
Switchgrass	Panicum virgatum		X	X	A
Sand Bluestem	Andropogon hallii			X	L
Indian Ricegrass	Oryzopsis hymenoides			X	L
Needle & Thread	Stipa comata			X	L
Sand Lovegrass	Eragrostis trichodes			X	A
Beachgrass	Ammophila spp.		X		NA
Blowout grass	Redfieldia flexuosa		(W)	X	L
Sandhill Muhly	Muhlenbergia pungens		(W)	X	L
Acid Tolerant Grasses					
Canada Bluegrass	Poa Compressa	"Rubens"	X	X	A
Perennial Ryegrass	Lolium perenne		X	X	A
Colonial Bentgrass	Agrostis tenuis	"Highland"	X	X	A
Creeping Bentgrass	Agrostis palustris		X	X	A
Creeping Foxtail	Alopecurus arundinaceus	"Garrison"	X	X	A
Deer Tongue Grass	Panicum clandestinum	"Tioga"	X		L
Hard Fescue	Festuca ovina, var. duriuscula	"Durar"	X	X	A
Bermudagrass	Cynodon dactylon		X (W)	X	A
Meadow Foxtail	Alopecurus pratensis		X	X	A
Red Fescue	Festuca rubra		X	X	A
Redtop	Agrostis alba		X	X	A
Switchgrass	Panicum virgatum		X (W)	X	A
Weeping Lovegrass	Eragrostis curvula		X (W)	X	A
Alkaline Tolerant Grasses					
Alkali Sacaton	Sporobolus airoides			X	A
Bermudagrass	Cynodon dactylon		X (W)	X	A
Foxtail Barley	Hordeum jubatum		X	X	A
Perennial Ryegrass	Lolium perenne		X	X	A
Streambank Wheatgrass	Agropyron riparium	"Sodar"	X	X	A
Tall Wheatgrass	Agropyron elongatum	"Alkar"	X	X	A
Western Wheatgrass	Agropyron smithii		X	X	A
Alkali Cordgrass	Spartina gracilis			X	NA
Basin Wildrye	Elymus Cinereus			X	NA
Canada Wildrye	Elymus canadensis		X	X	NA
Saltgrass	Distichlis stricta		(W)	X	NA
Russian Wildrye	Elymus junceus	"Sawki"		X	A
Crested Wheatgrass	Agropyron desertorum			X	A
Alkali Grass	Puccinellia lemmoni	"Lemmons"		X	A
Slender Wheatgrass	Agropyron trachycaulum				
Grasses & Legumes Tolerant of Moist Soils					
Alsike Clover	Trifolium hybridum		X	X	A
Alkali Cordgrass	Spartina gracilis			X	A
Reed Canarygrass	Phalaris arundinacea		X	X	A
Colonial Bentgrass	Agrostis tenuis	"Highland"	X	X	A
Creeping Bentgrass	Agrostis palustris		X	X	A
Poa trivialis	Poa trivialis	"Sabre"	X		A
Creeping Foxtail	Alopecurus arundinaceus	"Garrison"	X	X	A
Meadow Foxtail	Alopecurus pratensis		X	X	A
Perennial Ryegrass	Lolium perenne		X	X	A
Legumes					
Crown Vetch	Coronilla varia	"Penngift"	X	X	A
Birdfoot Treefoil	Lotus corniculatus	"Empire"	X	X	A
Sericea Lespedeza	Lespedeza cuneata		X	X	A
White Clover	Trifolium repens		X	X	A
Alsike Clover	Trifolium hybridum				

A — commercially available
L — limited availability
NA — not commercially available

W — warm season grass best adapted to the southern states or similar climate

An in



Cylinder and crankcase assembly of The Green Machine 22.5 cc engine. !.2 H.P. in a 6-lb package. Over 5 years of field exposure have helped create new standards of 2-cycle performance.

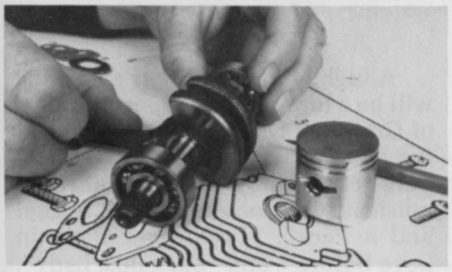
©1979, HMC, Torrance, CA. GM 266

The Green Machine trimmer-pruner-cutter.

side look at a classic.

In 1972, The Green Machine introduced a gas-powered string trimmer employing a new concept —extreme light weight combined with amazing torque. It proved the ideal tool for high production weed and grass trimming, as well as brush cutting and tree pruning. From the start, Green Machines set new industry standards for quality—and new records for time-saving and money-making.
The reasons are basic: ingenious design and a fanatic devotion to excellence.

For instance, The Green Machine



model 3000 engines have been dynomometer tested—at full throttle and full load—for 200 hours. That's equal to 600 hours of field operation. Actual field operation of 1000 to 1500 hours is common-place.

Chrome and hone

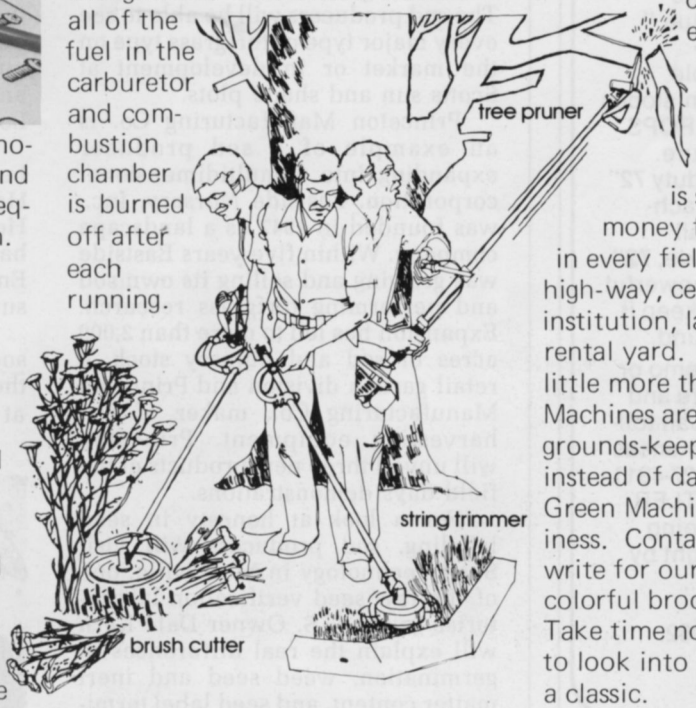
To understand what's behind Green Machine performance, just take a look inside a model 3000 engine.

You'll see a precision die-cast cylinder with polished chrome-plated bore—plus such refinements as piston-port fuel timing and almost five square inches of scavenge porting. Running inside that chrome-protected cylinder, you'll see a precision die-cast aluminum piston, micro-honed and fitted with double, positively-located rings.

You'll also see a crankshaft and rod assembly of high-carbon steel, precision-machined, and aligned to ±.001 -inch tolerances, running with high-speed ball-type main bearings and needle-type rod journal bearings.

Easy starting with P.F.S.

Long engine life is a recognized Green Machine virtue. So is easy starting. Thanks to a proven, reliable fuel pump and carburetor design. Plus an important Green Machine exclusive: Positive Fuel Shut-off. Engine "kill" is accomplished by stopping the fuel supply to the engine, rather than by cutting the ignition. This means that all of the fuel in the carburetor and combustion chamber is burned off after each running.



Fresh fuel is used for each start. Conventional "ignition kill" allows the fuel and oil mixture to remain in the chamber and carburetor where it can become stale and even, with time, create a residue that prevents starting.

Nine heads and blades

Green Machine introduced the first professional-quality Tap-For-Cord automatic string-feed head. A total of five different string trimmer heads are now offered as well as four quick-change blades.

A string trimmer... and more

The Green Machine is a great string trimmer—and a great brush cutter, and tree pruner. With accessory metal blades, one man can clear up to an acre of brush a day, cutting easily through vines up to ¾-inch thick. Tree branches up to three inches thick can be sliced through easily— in a single stroke.

See what's in it for you

The Green Machine is saving time and making money for thousands of users in every field: park and municipal, high-way, cemetary, estate, golf course, institution, landscape, farm, school, rental yard. Crews equipped with little more than mowers and Green Machines are completing massive grounds-keeping chores in hours, instead of days. See what The Green Machine can do for your business. Contact your dealer or write for our new, colorful brochures. Take time now to look into a classic.

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The Green Machine®

A yard-care classic.

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They rave about its self-leveling operator station and engine platform, and how it crawls in and out of ditches.

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Besides the heavy duty 72" rotary deck, other attachments include 60" flail mower, 72" dozer blade, 72" rotary broom, and a powerful 60" snow thrower to keep it working the year around.

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For HUD: OAH(CO)m 2635

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SOD FIELD DAYS INCLUDE VISIT TO SCOTTS, PRINCETON

Members of the American Sod Producers Association will visit two of their largest suppliers during the 13th Annual Summer Convention and Field Days at Columbus, Ohio this month.

Both O.M. Scott & Sons and Princeton Manufacturing (part of Eastside Nursery) have played major roles in the development of the sod industry.

These tours are an expansion of the field days last summer in Washington and Idaho where the sod producers saw first-hand seed production at Jacklin Seed Co.

O.M. Scotts has a very large research center in Marysville, OH, fifteen miles from Columbus. Sod producers will see acres of test plots for improved turf seed and the labs where Scotts develops new turfgrass varieties, fertilizers, insecticides, fungicides, and herbicides. The sod producers will be able to see every major type of turfgrass type on the market or in development at Scotts sun and shade plots.

Princeton Manufacturing Co. is an example of a sod producer expanding into a multidimensional corporation. Eastside Nursery, Inc., was founded in 1947 as a landscape company. Within five years Eastside was growing and selling its own sod and performing turfgrass research. Expansion has led to more than 2,000 acres of sod and nursery stock, a retail garden division and Princeton Manufacturing Co., maker of sod harvesting equipment. Princeton will unveil three new products at the field days demonstrations.

For a look at honesty in seed labeling, sod producers will visit Seed Technology in Marysville, one of the few seed verification laboratories in the U.S. Owner Dale Kern will explain the real differences in germination, weed seed and inert matter content, and seed label terminology. Kern will soon announce a proposal to improve the reliability of seed labels as verified by seed testing laboratories.

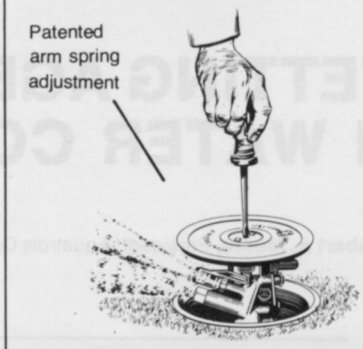
A highlight of this year's meeting will be a dinner theatre performance of Guys and Dolls. ASPA has bought the house for the night so that members can enjoy this memorable musical with songs such as "Bushel and a Peck", "I've Never Been in Love Before", and "Luck Be a Lady".

A special ladies program has been arranged featuring a tour of Heisey Glass Museum, Davidson House, and Granville Inn. Antiques, handmade glass, and dining in an old English atmosphere will take the summer heat off the ladies.

Of course, all major suppliers of sod equipment will demonstrate their latest machinery and products at the field days. **WTT**

German Village where ladies can shop for antiques (top). Research Center at O. M. Scott & Sons in Marysville (right).

The French Market offers a wide variety of shops (top). Headquarters of Princeton Mfg. Co. (above).



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WETTING AGENTS AND THEIR ROLE IN WATER CONSERVATION TODAY

By Robert A. Moore, President, Aquatrols Corp. of America, New Jersey

Robert Moore is a chemical engineer who, 25 years ago, developed a product to improve the penetration of water into all types of soils. Moore received his degree from Cornell University and previously worked for Mobil Corp.

A few years ago, we were all shocked, and made well aware of our dependency on oil — particularly foreign oil — and we have been talking about "An Energy Crisis" ever since. It is my firm belief that our next national crisis will be "A Water Crisis." As an example, at the Oklahoma Turf Conference, in December 1978, Dr. Huffine recalled a comment by Marv Ferguson, that if this nation ever has another Civil War, it will be fought over water.

I don't believe we'll run out of water! But I do believe we must stop wasting water. We must learn to use water efficiently. Some areas of our country are now very aware of the necessity to conserve water, and have started various programs. Most of these programs require registering and reporting the quantity of water used, either monthly, quarterly or yearly. Very few areas are actually restricting water use except in cases of extreme drought or water shortages. We have all read about these checks — and in some years, have experienced such regulation.

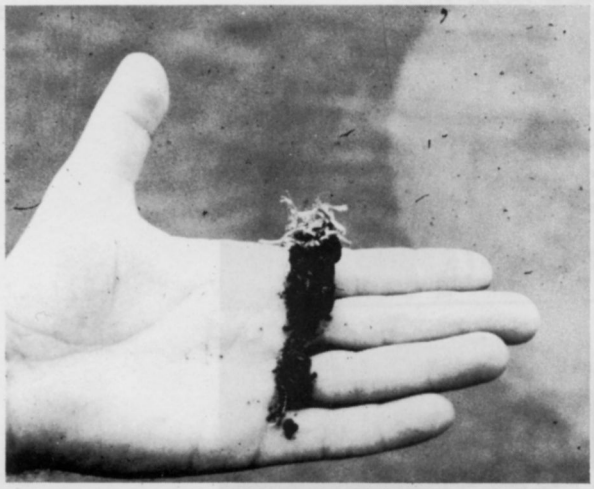
The present requirements for registration and monitoring of water-use, provide the mechanism for future planning, and future restrictions, if and when they are needed. Take note of how many conferences in recent years are placing an increasing emphasis on water. When our company started twenty-five years ago, very few conference programs considered water at all. Today's increased awareness of potential limited water resources is sharpening our senses on ways to more economically use water — ways to make water more efficient.

One enormously useful tool to make water more efficient, that has gained recognition in the last few years, is the use of soil wetting agents. Before we discuss their place in water conservation and improved plant growth, let's take a quick look at the vital role of water in plant growth and turf maintenance; and at some of the characteristics of water that can lead to problems. Bob Kneebone, has pointed out that water is essential for every function within the plant — for photosynthesis, for cooling, for growth, for turgor and for root development. It is used as a solvent, as a reagent, and as a nutrient — in fact the largest nutrient used by a plant. Water is also involved in every maintenance practice in your operations — fertilizing, pesticide treatments, mowing, aerifying — it even affects the quality of playing conditions — sometimes to the point of eliminating play.

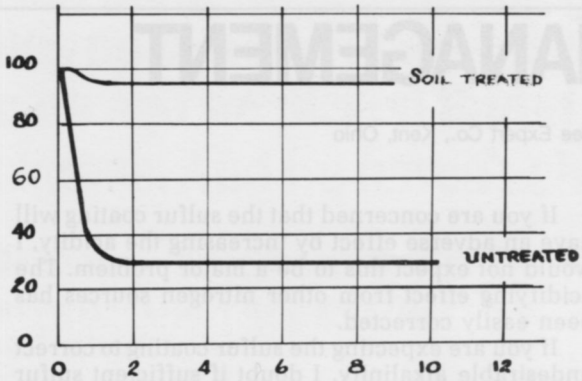
Most properties of water are beneficial, but two in particular, surface tension and the moisture tension in the soil, can be obstacles leading to inefficient water use, and turf losses. If we investigate the relationship between these moisture-tensions, turf losses and water uses, we see a definite pattern. Plain water has a lot of tension and hang-ups that can cause soil-water problems, one obvious example is low infiltration rates and puddling.

Puddling leads to run-off, and evaporative loss of water. One U.S.D.A. survey in the plains states, indicated that less than 20% of the natural rainfall actually becomes root-zone moisture — the water being lost by run-off and evaporation. Without water in the root-zone plants can't function. Plain water with its high tensions, moves slowly in fine textured soils. Though not always a loss of water, this is another inefficient use, since turf can't utilize water from a saturated soil with poor aeration. Diseases such as root rots, pythium, and other water molds, as well as algaes increase under these conditions, weaken the turf, add to the inefficient use of water, and many times result in turf losses.

On the other hand, in the coarse texture soils, which have been enjoying great popularity for the past few years, the high tensions of plain water create different problems. Water tends to channel and not wet the soil profile uniformly. These soils can be droughty requiring greater amounts of water. In addition, the sandy type soils have been shown to produce a hard-to-wet condition referred to as localized dry-spots. These areas literally



Poa annua deeply rooted in the middle of summer because of treatment with wetting agent.



Percent water penetration in inches of untreated versus treated soi.

repell water, resulting in wilting and turfgrass losses. Repellent areas require special hand labor and extra waterings to try to save the turf — and that can cost you money! Thatch can also inhibit the movement of plain water, consequently, the movement of nutrients and other chemicals, particularly soil insecticides, are limited, weakening the grass and resulting in turf losses.

As we review these problems that can lead to turf losses, we note that they can be classified as WATER problems — not SOIL problems. In each case there were potential turf problems because there was too much water or too little water. And yet the approach to solving the situation has historically been aerifying and soil renovation. Though the soil condition is involved, the main cause of the turf losses outlined has been the high tensions of plain water.

It is essential for the growth of healthy plants and for the conservation of water that certain compensations be made to promote a more efficient and wise use of water.

As mentioned earlier, the use of soil wetting agents to change water by lowering its tensions is rapidly gaining recognition for the purpose of "Making Water Better." Under low-tension-water conditions, water percolates faster. Puddling is reduced. Run-off and evaporation losses are reduced or eliminated. University data using tensiometers indicated a reduction of 30 to 50% in water use requirements when using wetting agents. That could mean a 30 to 50% reduction in salts introduced when using high salt content water — an important factor in these western states. Erosion losses were reduced by 65% in these same tests — which were under the severe conditions of 6 inches per hour on a 30% slope. All this, simply using a wetting agent to compensate for water's few negative characteristics.

A statement that has often been heard is that we can't do anything about the problem of water pene-

Continues on page 44

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VEGETATION MANAGEMENT

By Roger Funk, Ph.D., Davey Tree Expert Co., Kent, Ohio

Q: *Can sprayers be cleaned out after they have been used to apply Silvex?*

A: We have not had good success in decontaminating large sprayers after the use of phenoxy herbicides.

Our standard procedure is to clean the sprayer with ammonia and then test clean water which has been pumped through the sprayer on tomato or bean plants. If no distortion occurs, the cleaning operation was successful. The process may have to be repeated several times. In the case of older equipment with pitted or rough internal surfaces, decontamination may not be practical.

The decontamination process is outlined below:

(1) Use one gallon of household ammonia per 10 gallons of water. Pump a small amount of ammonia solution through the system and let stand overnight. If applicable, disassemble nozzles and soak the caps, screws, etc., in the ammonia solution.

(2) Drain the material and flush the system twice with clean water.

(3) Circulate the third rinse water through the system and allow to stand overnight.

(4) Collect a sample which has been pumped through the system and spray onto the indicator plants.

Q: *We have a tree-lined lane on campus that gets a lot of student traffic. The grass is nearly bare, and some of the trees are beginning to die back. We are considering resodding the area when school is not in session this summer, but what can we do for the trees?*

A: Soil compaction from foot traffic can be a very serious problem for both trees and turf. Compaction restricts water and oxygen penetration, resulting in poor root growth and often death of existing roots. Aerators are commonly used on athletic fields and occasionally on home lawns to relieve compaction. The most effective turf aerators remove finger-sized cores of soil to a depth of three to four inches. The root zone of the trees can be aerated by drilling holes to a depth of about 18 inches on a spacing of one and a half to two feet.

You may want to consider wood or bark chips instead of turf, if applicable in your situation. Both wood chips and shredded bark have been used successfully to "cushion" foot traffic along wooded trails to protect the adjacent trees.

Q: *What changes can be expected in soil pH if a sulfur-coated slow-release fertilizer is used?*

A: The conversion of sulfur to sulfate will make the soil more acidic. The increase in acidity will be determined primarily by the amount of fertilizer applied and the oil texture.

If you are concerned that the sulfur coating will have an adverse effect by increasing the acidity, I would not expect this to be a major problem. The acidifying effect from other nitrogen sources has been easily corrected.

If you are expecting the sulfur coating to correct undesirable alkalinity, I doubt if sufficient sulfur will be applied. Sulfur-coated urea (36-0-0) has a sulfur content of about 12%. If, in a single season, you apply four pounds nitrogen per 1000 square feet, you will also apply 2.4 pounds of sulfur to the same area.

As a general rule, 20 pounds of sulfur per 1000 square feet is required to decrease the pH of soil solution by one unit. In practice, the pH of clay soils is difficult to lower, particularly if the soil is inherently calcareous.

Q: *Last year our oak trees were covered with galls. Are these caused by a disease or insect, and how do I get rid of them?*

A: Galls can be caused by insects, mites, nematodes or fungi. Since you indicated that your oaks were "covered with galls," you are probably referring to leaf and/or twig galls.

Oaks are infested with over 800 insect galls, most of which are caused by wasps. These galls rarely affect the health of the trees, but control may be warranted for aesthetics. Unfortunately, the life histories of the majority of these insects have not been determined, so the timings for control have yet to be established. On a trial basis, you could spray the tree with insecticide at budbreak and again seven to 10 days later.

Q: *One of my clients had a 4-inch tree which broke near the ground. The break was clean and looked almost like a joint. Could it have broken apart where it was grafted?*

A: Yes. Some graft incompatibilities may not become evident until the tree has grown a number of years.

It is also possible that wire or nylon cord used to secure the ball wrapping to the trunk was not removed or cut at the time of planting and subsequently girdled the tree.

Q: *The last few years we have used quite a lot of salts on our driveways during the winter and many of the shrubs along the road are beginning to die back. Could you recommend some shrubs and ground covers that are salt tolerant?*

A: I have completed the following list from a number of articles on the effect of deicing salts on plants. Of course, there are many other factors you should also consider when selecting plants for use in the landscape.

Continues on page 38

"In our area, we need a bluegrass that comes up fast and stays green longer... 3 years ago* we picked Baron Kentucky Bluegrass. And we haven't changed since."

"Our season isn't as long as most areas of North America and the grass we seed must get up quickly and mature as fast as possible. We usually got about half a crop until Baron came along. Now we get two-thirds or three-quarters of a crop in the same growing period."

Here are some comments Loren Hentges of Green-Glo Turf Farm, Blaine, Minnesota had about...

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"I always felt that one of the big disadvantages to a bluegrass sod was dry weather. Baron stands dry weather better than any bluegrass I have ever grown."

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"With Baron, I can take a crop off, re-seed for another stand and still get good establishment and excellent color in the Spring."

"The shipping quality of our sod is important to us. Baron makes a good roll because it is dense and keeps the roll tight."

*"It's now 8 years and I'm still using Baron on these 600 acres. With no disease problems. I'm not about to change as long as I get results like this."

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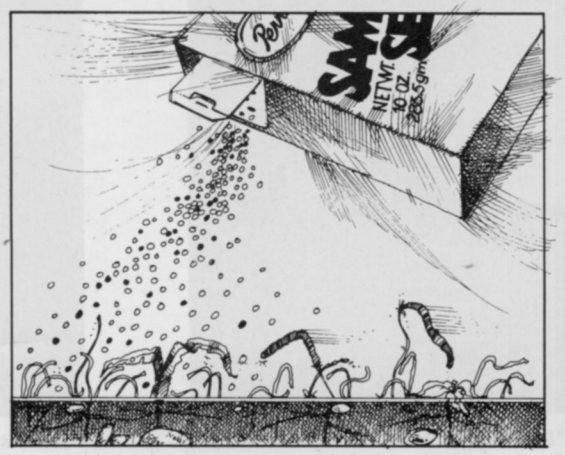

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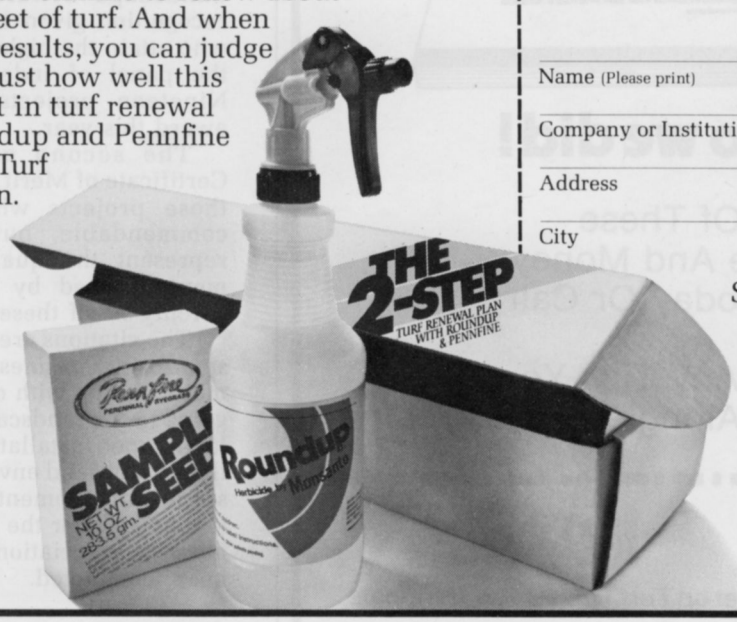

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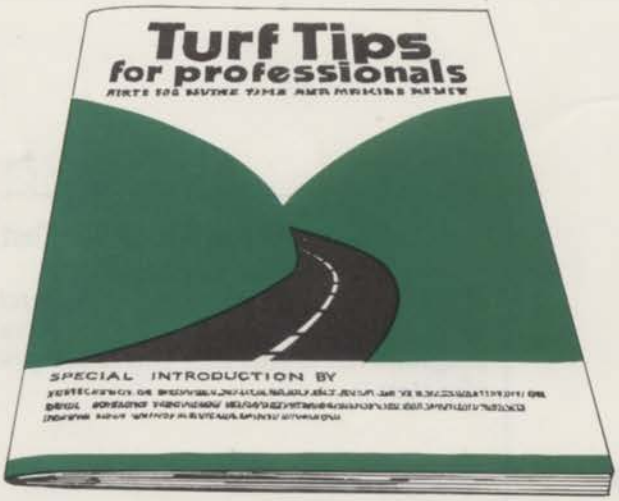

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First lady presents landscape honors

In a formal ceremony and reception at the White House today Mrs. Jimmy Carter met with 135 individuals receiving special recognition for their significant environmental contributions. Occasion was the 25th Landscape Awards Program of the American Association of Nurserymen.

The White House guests represented the sponsors, landscape architects and landscape installation firms responsible for 45 different environmental landscaping projects selected from around the nation for exceptional values they add to the quality of life in their communities. This was the ninth time in the program's history a First Lady has presented the awards, and the fifth time the event has taken place at the White House.

Objective of the program, according to Robert F. Lederer, executive vice president of the AAN, is to stimulate active participation in community improvement by industrial and commercial firms, private and public institutions, and municipalities.

"The national attention which is focussed on a number of outstanding examples through Mrs. Carter's personal interest encourages many others to make the same sorts of investment in their own community's well-being," Lederer said.

Two categories of awards were presented today. The first is the Landscape Award, the highest recognition given to the select few who attain the high standards set by the panel of independent judges. Nineteen projects received that award this year.

The second category is the Certificate of Merit which is given to those projects which are highly commendable, but do not quite represent the quality of achievement attained by the first group. Twenty-six of these were given.

The citations are presented to the sponsoring business, institution or municipality, with duplicate awards going to the landscape architect and landscape installation firm. More than a thousand environmental landscape improvements have received this honor over the past 25 years the nursery association's program has been conducted.

VALENCIA COMMUNITY COLLEGE, ORLANDO, FLORIDA. The site originated from an 85-acre

orange grove which surrounded a three acre lake. The central location of Lake Pamela provided a unique setting for the campus. The building growth was planned in a circular movement around the lake with a buffer of plantings screening the parking areas from the campus.

McDONNELL DOUGLAS CORPORATE HEADQUARTERS, ST. LOUIS, MISSOURI. The building is a three wing structure with curved sides between each of the wings. The planting emphasizes large masses of trees to place the building into a green setting, in scale with the building, and to serve as a buffer screening of Brown Road.

SAN DIEGO WILD ANIMAL PARK, CALIFORNIA. The park is an 1800 acre wildlife preserve and botanical garden in the San Pasqual Valley, 30 miles northeast of San Diego. The park is dedicated to both the preservation of animal and plant life. Landscaping throughout the preserve prepetuates the conservation theme by duplicating, where possible, the animals' natural environments.

BEVERLY HOSPITAL MEMORIAL GARDEN, BOSTON, MASSACHUSETTS. Unlike most gardens, this was designed to be viewed from above from patient rooms as well as to be enjoyed by convalescing patients. A "frozen beach stone" path winds throughout the garden, separating a gently rolling lawn from a shrub border in which almost every variety of broad-leaved evergreen hardy to the area provides an always changing display.

PACKER COLLEGIATE INSTITUTE SCHOOLYARD, BROOKLYN, NEW YORK. The school's 150' x 150' yard serves as the school's only outdoor area for recreation to accommodate 100 children, ages 3 to 17. A small garden plot provides an opportunity for digging and planting projects.

FILENE'S SHOPPERS' PARK, BOSTON, MASSACHUSETTS. The basic design of the park is simple. Standardized planters for trees and flowers are arranged in an interlocking pattern which breaks the area into small spaces in order to give a sense of seclusion to individual park users.

Continues on page 40

FIBERGLASS TURF SPRAYERS

Myers

TL10 and 40 Series

VTL10 Series

Myers fairway and general turf maintenance sprayers offer non-corrosive fiberglass construction throughout. Agitator assembly is stainless steel. Wide choice of optional running gear. PTO or engine drive. 100, 200 and 300 gallon tanks. 10 and 25 GPM. Write for our catalog.

Myers TurfLine

F. E. MYERS CO.
400 ORANGE STREET, ASHLAND, OH 44805
DIVISION OF McNEIL CORPORATION

Circle **116** on free information card

"Satoh hugs the hillside like a mountain goat. And that satisfies me."

Front tire: 9.5L-10
Rear tire: 21.5L-16.1

Satoh satisfaction starts with the Stallion Ground Hugger's dependable, smooth-running 38hp water-cooled Diesel engine. With nine forward speeds (three reverse) and dual-speed live PTO (540 and 1,000 rpm), the cost-efficient Stallion Ground Hugger is ideal for hilly terrain uses such as municipal park maintenance and golf course grooming.

And its standard power steering gives you effortless maneuverability.

Let Satoh satisfy your tractor requirements like a pro. It satisfies mine.

Satoh. Satisfaction!

Get it at your **SATOH** *tractor dealer. P.O. Box 5020, New York, N.Y. 10022*

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Vegetation Management *from page 32*

Salt Tolerance* of Shrubs and Ground Covers

Tolerant
Pfitzer Juniper
(Juniperus chinensis var. pfitzeriana)

Tatarian Honeysuckle
Lonicera tatarica)
Amur privet
(Ligustrum amurense)

Japanese honeysuckle
(Lonicera japonica)

Firethorn
(Pyracantha coccinea)

Black currant
(Ribes nigrum)

Weigela
(Weigela sp.)

Sensitive
Japanese barberry
(Berberis thunbergi)

Boxwood
(Buxus sempervirens)

Squawbush
(Rhus trilobata)

Buffaloberry
(Shepherdia argentea)

Tamarisk
(Tamarix pentandra)

Yucca or Adams needle
(Yucca filamentosa)

Arborvitaes
(Thuja species)

Bayberry
(Myrica pensylvanica)

Virginia creeper
(Parthenocissus quinquefolia)

Boston Ivy
(Parthenocissus tricuspidata)

Autumn olive
(Elaeagnus umbellata)

Rugosa rose
(Rosa rugosa)

Intermediate

'Spring glory' forsythia
(Forsythia intermedia)

Andorra juniper
(Juniperus horizontalis)

Winged euonymus
(Euonymus alatus)

Multiflora rose
(Rosa multiflora)

Arctic blue willow
(Salix purpurea var. nana)

Viburnums
(Viburnum species)

(*Soil salts; not necessarily)
(true for salts on foliage.)

THE PROBLEM SOLVERS
BY kbi

POP-RISER®
12" HIGH-POP KEEPS RISER OUT OF SIGHT EXCEPT WHEN SYSTEM IS ON.
½"x½"

FLEX-RISERS®
PREVENTS PIPE BREAKAGE. REPLACES THE SWING JOINT
½", ¾", 1", 1¼", 1½".

DRAINAGE PREVENTION VALVES
½", ¾", 1"
STOPS DRAINAGE THROUGH LOWEST HEADS.

HEAD-LOK™
½", ¾", 1"
LOCKS SPRINKLER HEAD ON SYSTEM
STOPS SPRINKLER THEFT.

COMPLETE SPECIFICATIONS AND SCHEMATIC LAYOUTS UPON REQUEST
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27114 HENRY MAYO DRIVE • VALENCIA, CALIFORNIA 91355 • (805) 257-3262

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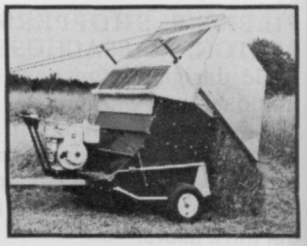
M-C MATHEWS COMPANY lawn genie®

72" PTO Model

The Pick-Up Mower

Mow smoothly and pick up clippings in one pass! The rugged, versatile Lawn Genie thatches lawns, verti-cuts greens, tees and fairways, sweeps leaves, wades through high weeds and empties easily from the tractor. It's the pick-up mower that cleans, mows and sweeps.

36", 60", 72" cutting widths - with or without loading hopper.



Mathews Company
BOX 70, CRYSTAL LAKE, IL 60014, PHONE: 815-459-2210

Circle **154** on free information card

When it comes to installing underground sprinkling or lighting systems, Ditch Witch vibratory plows mean good vibrations for you and for your job's bottom line. Because with vibratory plows, like our Model VP12, and our full line of plow modules for vehicles from 30 hp up to 100 hp class, you can make installations quickly, efficiently and profitably.

The VP12 lets you install a complete underground sprinkling system or lighting system without digging a trench. That means very little damage to expensive landscaping. And minimal restoration effort. Features like a rigid frame for stability and strength, four-wheel drive to handle rough terrain, and easy to reach controls make the Ditch Witch plows your best bet when it comes to rating job productivity. And whether it's installing a simple lawn sprinkler, a system large enough for a golf course, or decorative outdoor lighting, the more productive the equipment you use, the more profitable the job is for you. And that's good vibes in anybody's book.

Call your Ditch Witch dealer for a free demonstration. Or contact the Charles Machine Works, Inc., P.O. Box 66, Perry, Oklahoma 73077. TWX 910-830-6580. Call Toll Free (800) 654-6481.

Circle **136** on free information card

DITCH WITCH

DITCH WITCH IS THE ANSWER!

GOOD VIBES!

Ditch Witch and are registered trademarks of the Charles Machine Works, Inc.

BIG 18′10″ SWATH

ONE MOTT INTERSTATER cutting a big 18′10″ swath, with one tractor and one operator, will do the work of THREE 6′ mowers, mounted on THREE tractors, driven by THREE operators, with less maintainance, less down time, less fuel burned, and at far less total cost.

A MOTT INTERSTATER insures a better appearance and easier recutting because MOTT mowers not only cut but also mulch and distribute an even layer of clippings. For faster, safer mowing under a wide variety of conditions, specify the versatile MOTT . . . THE ORIGINAL FLAIL SAFE MOWING SYSTEM.

"INTERSTATER" is a registered trademark of MOTT CORPORATION as are "MOTT" and "HAMMER KNIFE".

Other model sizes range from 38″ to 88″ and gangs to 19 feet.

"Tell me more about FLAIL SAFE mowing."

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ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE _____

mott HAMMER KNIFE

MOTT CORPORATION

514 Shawmut, La Grange, Illinois 60525. (312) 354-7220

Circle **144** on free information card

Awards *from page 37*

BALTIMORE CITY'S INNER HARBOR, BALTIMORE, MARYLAND. This renewal project was designed to create a large recreational and gathering area for the surrounding community and public. Landscaping of the South and West Shores creates an inviting and park-like atmosphere along the city's waterfront.

LBJ MEMORIAL GROVE ON THE POTOMAC, WASHINGTON, D. C. The Grove covers twelve acres of the Lady Bird Johnson Park — an island in the Potomac River opposite the Pentagon in the nation's capital. The basic element of the design was the shaping of the land to create visual interest and the building of berms to screen sight and sound from the adjoining parkway traffic. The planting consist of almost nine hundred white pines varying in height from ten feet to twenty-five feet, arranged in a random pattern averaging sixteen feet on center. The shrubs consist of rhododendron, azaleas, schipka cherry-laurel, doblefile viburnum, summersweet, dogwood, Baltic ivy, plubgago and many varieties of daffodils.

CENTER CITY, WILLIAMSPORT, PENNSYLVANIA. The construction of a pedestrian mall on the main business street and the conversion of two other streets in the area to semi-malls vividly demonstrates what can be done when a community is conscientiously interested in improving itself and the quality of life for its residents. Full advantage was taken of the scale of the buildings and the spaces between. Important contrast was made between the existing masonry environment of the city and the bold plantings massed in visible areas of the renovated areas.

EVER SEE ANYTHING LIKE THIS?

It's a slide-in pickup sprayer. Sprays both IBDU and UF chemicals through the 20-foot boom or the 300-foot hose reel and handgun. 500-gallon tank fills fast and material loads easily through a ground-level chemical inductor. Completely hydraulic drive; 140 GPM constant agitation. Mail the coupon or call us. We'll send brochure and explain buying or leasing.

1111 So. Alpine • Suite 201
Rockford, IL 61108 • (815) 397-9367

Lawn-Pro spraying systems

NAME _____

ADDRESS _____

CITY _____ STATE and ZIP _____

Circle **122** on free information card

THE GREEN MAGIC™ SYSTEM

With MICRO-MUNCH

Decomposes undesirable Mat & Thatch and prevents it from re-developing

BEFORE

At time live soil bacterial spores were applied — note the accumulation of compacted Mat & Thatch at the surface. Heavy thatch sheds water, harbors insects and disease, and prevents deep root growth.

AFTER

15 weeks later — same lawn — note that the Mat & Thatch has almost completely disappeared, roots are deeper, and the soil is looser and in better physical condition due to bacterial decomposition.

INTRODUCTORY OFFER

Now, for the first time, a complete, natural product is available that contains natural organisms along with a completely balanced diet that will:

1. Naturally decompose mat & thatch up to ¾" within 9 to 12 weeks
2. Create more ideal conditions for the natural soil organisms to grow and multiply so they can continue their decomposition of Organic Matter, and at the same time, build up the productive capacity of the soil.
3. Reduces the stress conditions that produce insects and diseases, and provides a complete, balanced diet for the natural growth of desirable turf.
4. Reduces the need for: Frequent fertilizing
   Frequent watering
   Frequent applications of pesticides (fungicides & insecticides)
5. Eliminates the need for: Power Raking
   Frequent reseeding & resodding
   Loosens, aerifys and builds more productive soil naturally, along with beautiful, healthy plants.

   All you need to do is to mix the ingredient into your power spray rig, spray uniformly over your lawn — one application this season will decompose ½" to ¾" of Mat & Thatch, when used as directed.

ONE TIME OFFER — EXPIRES JULY 30, 1979

or as soon as current supplies are exhausted

ORDER FORM

Please rush the following:

No. of Kits	Kit Size	Price Per Kit	Total Cost
_____	10,000 sq. ft. Green Magic w/MICRO-MUNCH	$176.20	$ _____
_____	110,000 sq. ft. Green Magic w/MICRO-MUNCH plus FREE SOIL TEST w/recommendations	$1,610.54	$ _____

TOTAL KITS_____ TOTAL ORDER $_____

_____ Check for $_____enclosed — Freight will be paid by Agro Chem, Inc.

_____ Please charge to my (check one) _____MASTER CHARGE, _____ VISA
(Freight prepaid by Agro Chem, Inc.)

_____ Please bill my company, P.O. attached.

Signed _____

Company Name _____

City _____ State_____ Zip_____

Phone_____ - _____

Lawn Size _____ Type of Business _____

1. 10,000 sq. ft. treating kit Cost = $176.20

or

2. 110,000 sq. ft. treatment kit
   List price = $1894.75
   Less introductory Disc. = 284.21
   $1610.54

Plus 1 Free Complete Soil Analysis
Value = $250.00

Note: If you wish to continue growing your lawn naturally, healthfully and least expensively, it is essential that we test your soil to determine any problems or un-natural conditions that may kill the bacteria. The soil test comes with a complete report and recommendations.

AGRO·CHEM, INC.
"CONTROLLED GROWTH THROUGH CHEMISTRY"

Dealerships and LARGE QUANTITY Discounts Available

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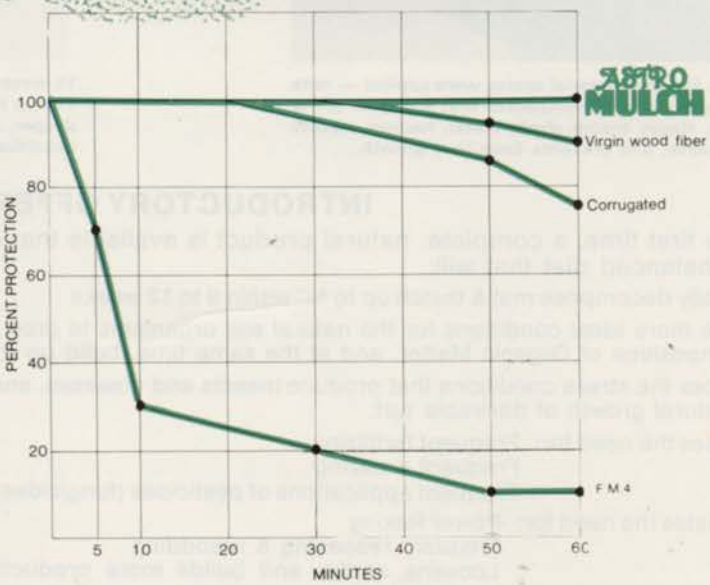
the different hydro-seeding system

TEST BY A CERTIFIED INDEPENDENT LABORATORY

SUPERIOR EROSION CONTROL

Only ASTRO MULCH held 100% on 1:1 slope after 6 inches per hour rain test



EXCELLENT . . .

pumpability
stickability

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- LEWISTON, MAINE 207-783-2029
  2 Avon St., Lewiston ME 04240
- DALLAS/FT. WORTH, TEXAS 817/625-5371/640-1488
  412 113th St., Arlington TX 76011
- LOS ANGELES, CALIFORNIA 213/232-3445
  645 E. 60th St., Los Angeles, CA 90001
- KANSAS CITY, MISSOURI 816/781-1188
  113 S. Marietta St., Excelsior Sp., MO 64024
- SAN FRANCISCO, CALIFORNIA 408/244-6615
  305 Mathew St., Santa Clara, CA 95050
- CHARLOTTESVILLE, VIRGINIA 804/295-2131
  1000 Harris Street, Charlottesville, VA 22902
- SEATTLE, WASHINGTON 206/242-9990
  19016 - 13th Pl. So., Des Moines, WA 98148
- FARGO, NORTH DAKOTA 701/282-7701
  P.O. 1496/5900 7th Ave. N., Fargo, ND 58102

Member • International Erosion Control Association • Southern California Turfgrass Council

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1-800-252-0260
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1-800-421-5904

Corporate Office: Los Angeles, California 90003

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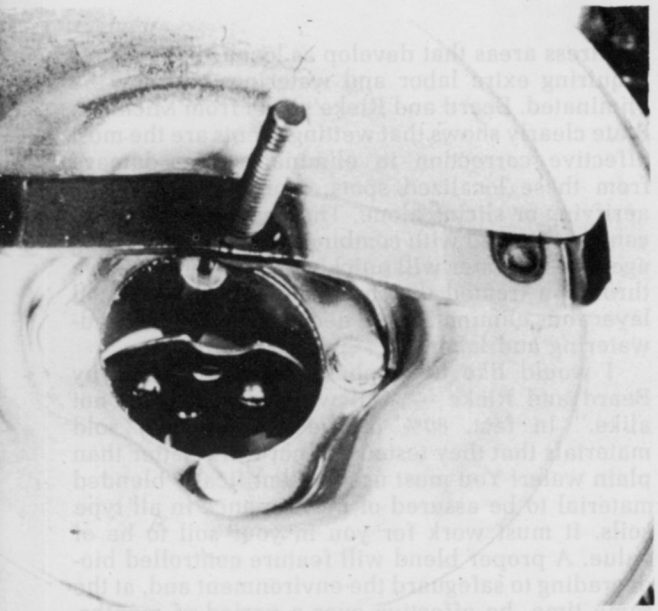

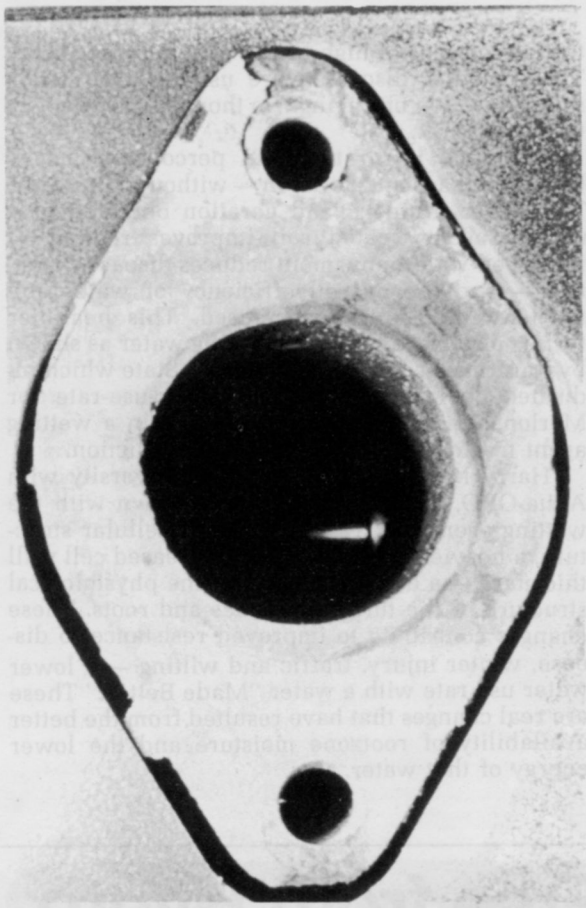

Look down the throat of the carburetor (top, left) to check for dirt and debris getting past the air cleaner. After removing the carburetor, check the intake port for evidence of gasket damage, poor carburetor seating, and dirt. (top, right)

Engines *from page 21*

carbon build up inside and the type of build up. Hard and crusty carbon might indicate that the engine is overdue for its scheduled carbon cleanout or that for some reason the engine has been running excessively hot. A softer, sootier deposit would mean that you are experiencing excessive oil consumption or that you have too rich a fuel mixture.

When you pull the pan, check it closely for sludge and pieces of parts or foreign objects. Tracking down the source of such foreign objects will give you a real clue to the source of your engine troubles.

Next come the valves. Power loss, poor compression, difficult starting, and high fuel consumption are all signs of valve problems.

One of the most common of the valve failures is burning. A burned valve is most often the result of improper seating or leakage. If the entire surface of the valve face is damaged, you know that there was probably insufficient valve clearance. As the engine got hot, the entire valve was prevented from seating.

If the face has been burned only on one side, the burning was caused by a poor grind on the face or the seat, or the wrong valve was used. If the damage was caused by an improper grind, inspect the face and the seat. You may be able to regrind the valve, but often you are better off to replace it.

Sticking valves, another common valve ailment, is most often caused by gum, combustion deposits, and carbon on the valve stem. An engine that dies after 20 or 30 minutes of running and is then hard to start is displaying typical symptoms of sticking valves.

The deposits are often caused by running the engine excessively hot. If you notice that the engine was dirty or that the air intake was restricted, you may have found some of the contributing factors to the valve sticking problem since dirt and restricted air flow would cause the engine to run hot. The cure for stick valves is to ream the guides and replace or clean the valves.

Condensation inside the engine or running with too lean a fuel mixture can cause valve erosion which shows up at the top of the stem and the underside of the valve head.

At this point, what have you learned by carefully examining the appearance and condition of the engine components? You may know that your maintenance schedule should call for closer examination of the air cleaner, a cleaning of the engine surface and cooling fins, or a close watch on the oil. You might have learned that you are allowing dirt and grit to get into the engine or are running too lean a gas mixture. What you are seeing may be a series of seemingly small things that have contributed to poor engine performance.

In the next installment, I'll discuss pistons, rings, connecting rods, and what you can learn from analyzing them during an engine teardown. **WTT**

tration in areas of high traffic — high compaction. The remedies discussed are usually aerification soil renovation or paving. No thought is ever given to the WATER.

Improved infiltration and percolation means better drainage and aeration — without rebuilding! The better drainage and aeration obtained in a wetting agent treated soil improves rooting — improved water movement reduces disease potential — and the overall efficiency of water and nutrient utilization is increased. This healthier turf, is also more efficient in using water as shown by Kauffman's data from Michigan State which indicated a significantly lower water-use-rate for Merion Kentucky bluegrass growing in a wetting agent treated soil — an 11 to 14% reduction.

Harry Muesel's work at Yale University with Aqua-GRO, showed that the turf grown with the wetting agent had a more compact cellular structure, a heavier cutin layer, and increased cell wall thickness — a definite change in the physiological structure of the turfgrass blades and roots. These changes contribute to improved resistance to disease, winter injury, traffic and wilting — a lower water use rate with a water "Made Better." These are real changes that have resulted from the better availability of rootzone moisture and the lower energy of that water.

Stress areas that develop as localized dry spots requiring extra labor and waterings can now be eliminated. Beard and Rieke's data from Michigan State clearly shows that wetting agents are the most effective correction in eliminating the damage from these localized spots; more effective than aerifying or slicing alone. The best overall results can be obtained with combined coring and wetting agents use. Water will quickly and uniformly move through a treated thatch and water repellent soil layer thus eliminating the necessity for extra hand-watering and labor.

I would like to emphasize a point made by Beard and Rieke — "All wetting agents are not alike." In fact, 80% of the commercially sold materials that they tested did not work better than plain water! You must use a scientifically blended material to be assured of performance in all type soils. It must work for you in your soil to be of value. A proper blend will feature controlled biodegrading to safeguard the environment and, at the same time, be effective over a period of months. Some materials are lost after only two or three waterings. Your use of wetting agents should be on a repeating basis in order to compensate for this controlled biodegradation. **WTT**

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Sprayer Pump Handbook

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8 pages of helpful information to help you select and use your pumps better. Hookup diagrams for piston, roller and centrifugal pumps. Graphs of pump outputs, flow through spray nozzles. Data on pump and sprayer component selection plus much more. Send for your free copy now.

When you need pumps for sprayers or pressure wash systems, make your choice Hypro.

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Circle **142** on free information card

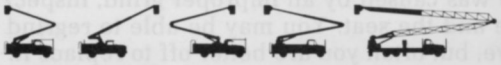
HI-RANGER®

PRODUCTIVE

Proven by owners for line clearing efficiency, and preferred by operators for precise tower control and bucket positioning. HI-RANGERs are No. 1 in utility and contractor preference for insulated aerial man-lifts. Patented HI-RANGER "3D" one-hand control, hydraulic tool line options, chip boxes, and other features may benefit your operations. Write for "4F-5F CATALOG".

HI-RANGER Aerial Towers meet the "American National Standard for Vehicle-Mounted Elevating and Rotating Work Platforms ANSI A92.2-1969," as required by the Williams-Steiger Occupational Safety and Health Act of 1970; Part 1910, Occupational Safety and Health Standards; Section 1910.67; Part 1926, Safety and Health Regulations for Construction; Sections 1926.451 (f), 1926.556, 1926.952 (b), and 1926.955 (e), as applicable.

SINCE 1950
HI-RANGER



MOBILE AERIAL TOWERS, INC./Dept. N/2314 BOWSER AVE./FORT WAYNE, IND. 46803

Circle **119** on free information card

PRODUCTS

Garlon 3A liquid amine herbicide controls woody plants and broadleaf weeds on rights-of-way and industrial sites. It is also useful in preparing forest sites, according to Dow Chemical U.S.A.

The herbicide handles more than 10 species of common annual and perennial broadleaf weeds and is active against more than 35 woody species, including ash and oaks.

Used at recommended rates, Garlon is non-injurious to grasses and helps prevent soil erosion in brush control programs. It has a short residual in the soil and relatively low toxicity levels to fish, mammalian wildlife, and non-target plants.

For woody plant control, 2 to 3 gal. of Garlon should be applied in 20 to 100 gal. of water an acre. For broadleaf weed control, ⅓ to 1½ gal. of Garlon is suggested for 20 to 100 gal. of water an acre.

Circle 701 on free information card

Pennfine perennial ryegrass and Roundup herbicide from Monsanto have combined capabilities to provide an effective program for renewing or renovating existing turf areas.

Roundup destroys a variety of annual and perennial grasses and broadleaf weeds. Because Roundup leaves no residual soil activity, Pennfine can be spread over the treated area in about seven days after the herbicide application. It germinates quickly and grows into a dense, full stand of grass.

A test kit contains instructions and enough Roundup and Pennfine to renew approximately 200 sq. ft. of turf.

Circle 702 on free information card

Two all-terrain forklifts with Massey-Ferguson industrial tractor power units have been introduced by Harlo Products Corp. The 4,000-lb. capacity

HECKENDORN's Economical 72"
Riding Mower has increased cutting power

Modifications include:

- Even greater cutting power--bigger engine w/electric start, more horsepower and torque;
- Larger spindles;
- Easily replaceable drive sprocket;
- Redesigned instrument panel;
- Comfort, shock mounted seat.

PLUS HECKENDORN standard features;

- Zero turn radius;
- Hinged sidemount units follow ground contours allowing trim to within ½" of obstacles;
- Rugged construction;
- Easy maintenance.

Economically priced, used for tough cutting jobs.

For new GSA #, dealer name or product literature, please call or write.

Industrial Grounds Maintenance Equipment
HECKENDORN
MANUFACTURING CO., INC. / Cedar Point, KS 66843 316 / 274-4201

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Circle **137** on free information card

H-30 forklift and the 5,000 and 6,000-lb.-capacity H-50 are powered by 45-hp. and 62-hp. Perkins diesel engines, respectively.

Both models feature heat-treated forks, instant reverse transmissions with torque converters, hydraulic side shifters, and deluxe operator seats.

The machines also provide differential locks for additional traction, planetary drive axles to reduce wear on drive components, wet disc brakes, complete hydraulic operation, and FOPS. Both forklifts are counterweighted and completely tested.

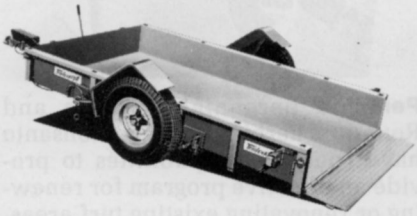
Masts come in 10½, 14, and 21½ ft. lift heights for the H-30. The H-50 provides 21½ and 28 ft. lift heights with 5,000-lb.-capacity. On the 6,000-lb.-capacity H-50 lift heights of 12 and 14 ft. are standard.

Circle 703 on free information card

Landglas from Owens-Corning Fiberglas contains eroding highway embankments, shoulders, and ditches. It helps beautify construction sites, eliminates unsafe adjacent areas, and greatly reduces the run-off silt and surface debris that contributes to pollution of water resources. No need for repetitive treatment with expensive materials.

The strand is applied most effectively with a special gun or else a standard straw mulcher unit. It comes in 1-ft.-high packages, weighing 35 to 40 lbs.

Circle 704 on free information card



For efficient load hauling, Trailevators from Magline Inc. lower to ground level for fast loading and hydraulically elevate the load to towing position in seconds. Eliminate need to lift heavy loads; simplify loading of large, bulky items; improve on-the-job safety; and reduce handling and hauling costs.

The trailers hold either 2,000 or 3,000 lbs. and come in bed sizes from 60 in. wide by 8 ft. long to 70 in. wide by 10 ft. long. Surge hydraulic brakes are standard on 3,000-lb. models; manual, double-acting 5,000-p.s.i. hydraulic pump is on all models. Optional equipment includes electric brakes, 3-in. forged lunette eye couplers, cargo restraints, and electric hydraulic pumps.

Circle 705 on free information card

Field Boss tractors from White Farm Equipment Co. are powered by 3-cylinder diesel engines. Model 2-30, rated at 27 PTO hp., utilizes a 91-cu.-in. displacement diesel; Model 2-35, 31 PTO hp., has 108-cu.-in. displacement.

Compact size of both tractors suits running augers and generators,

WIRE & PIPE LOCATOR
'TRACKER II'
by PEI

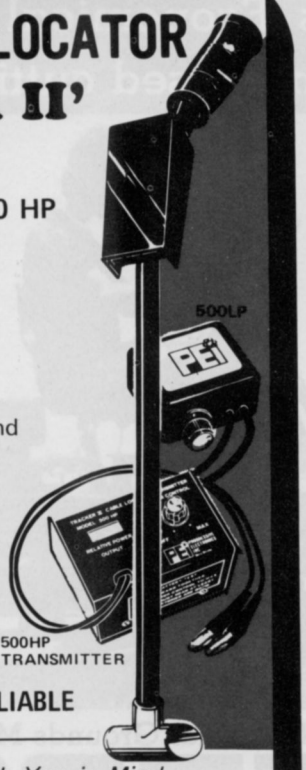
MODELS 500 LP & 500 HP

Locates - -
Opens/Shorts in Buried, Covered or Sheathed Wires

Tracks - -
Wire or pipes underground and in walls

- Variable Power Transmitter
- Will operate on active or dead wires
- No earth grounds required

LOW COST - ACCURATE - RELIABLE



Products Designed With You in Mind . . .

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(602) 834-4308 or (800) 528-8224

Circle **121** on free information card

Macrophoto of "J-tac" soil stabilizing film.

J-tac™
Soil and mulch tackifier

For Better Revegetation

J-tac provides a means of interlocking surface soil particles with seed, mulch and other additives used in revegetation projects. Helps resist erosion (wind, or rain) and movement of seed during critical establishment period.

RECLAMARE COMPANY
20727 7th Avenue South Seattle, WA 98148
206-824-2385

Circle **138** on free information card

When this low-growing, Swedish lawn beauty first stepped into the turf world it revolutionized the lawn industry.

Now another step! Fylking Kentucky bluegrass costs less than most other elite bluegrasses!

Fylking establishes fast, develops a greater density of rhizomes and root system. Fine-textured, velvety green, Fylking performs well when cut low (even low as one-half inch), and may need less mowing. Amazingly tough, Fylking Kentucky bluegrass has improved disease resistance to leaf spot, stripe smut, stem rust and leaf rust, as rated in tests by many major universities and institutions. Physically pure, genetically true seed, Fylking contains no annual bluegrass (Poa annua), bent grass or short-awned foxtail.

Take a giant step ahead by using Fylking as the backbone bargain of your next lawn turf mix. Ask for the Swedish beauty, Fylking Kentucky bluegrass at your local wholesale seed or sod distributor.

FYLKING KENTUCKY BLUEGRASS U.S. Plant Patent 2887

Another fine, quality-controlled product of Jacklin Seed Company.

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mowing roadsides and headlands. Four forward gears and one reverse work in harmony with a Hi/Lo range selector to produce eight forward and two reverse speed ranges. With Model 1010 loader, each tractor maneuvers easily to clear feedlot areas or alleyways and remove snow and landscape.

Standard features include complete gauge indicator lights; adjustable, padded seat; differential lock; and working headlamps, rear safety lamps, and flashing warning lamps. There is also a live 540-r.p.m. PTO, two-stage clutch control; power steering; Category I three-point hitch; adjustable four-position rear wheels; and five-position front axle.

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An asphalt replacement tackifier, the Terra Tack AR, substitutes for asphalt emulsion as a straw tackifier. Clean-up and maintenance of the Grass Growers, Inc. product takes a simple rinse with water.

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Vermeer Manufacturing Co. has introduced Model LM-20 compact riding plow-trencher.

As a lawn plow, it installs pipe and wire of ¼ in. dia. to 15 in. deep with little surface disturbance. It may also be equipped with a 15-in. wide front-mounted reel carrier.

The trencher attachment digs 24 in. deep and 6 in. wide. Dual augers place the soil to both sides of the trench for easy restoration and a 42-in. front-mounted backfill blade fills in the dirt.

The 19.5-hp. unit is powered by an Onan NHB-MS gas engine coupled to a Sundstrand hydrostatic drive and reaches ground speeds of 0 to 255 f.p.m., forward or reverse. It weighs 1,600 lbs. and is less than 36 in. wide with a wheelbase of 45½.

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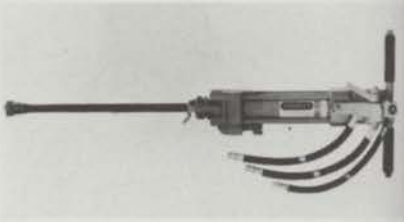

SK58 sinker from Stanley Hydraulic Tools uses air or water to clear holes from 1 to 3 in. dia. and up to 20 ft. deep, easily penetrating rock or concrete.

Direct drive rotation adjusts from 0 to 300 r.p.m. and is independent from its impact rate of 2,500 blows per minute. A feathering valve makes for easy starting. Comes with an integral hydraulic motor and is available in both open and closed center models. It weighs 65 lbs. and accepts standard steel bits.

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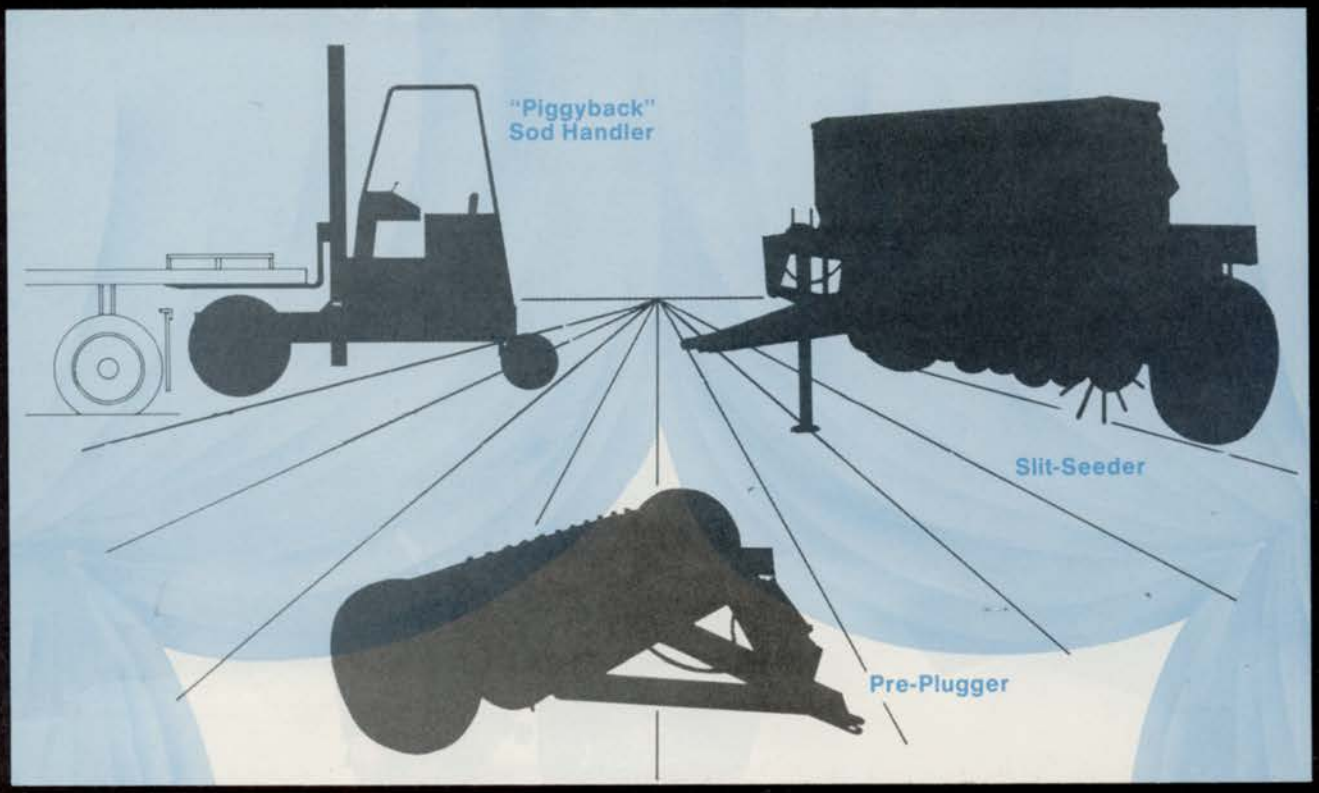

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Canal Winchester, Ohio 43110
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WT&T CLASSIFIEDS

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, Dorothy Lowe, Box 6951, Cleveland, Ohio 44101.

Rates: All classifications 65¢ per word. Box number, $1. All classified ads must be received by Publisher the 5th of the month preceding publication date and be accompanied by cash or money order covering full payment. Mail ad copy to: Dorothy Lowe, Weeds, Trees & Turf, P.O. Box 6951, Cleveland, Ohio 44101.

USED EQUIPMENT

2 — 50' AERIAL BASKETS, brush chipper, stump cutter, 2 sprayers, small crane. Parkway Tree Service, 12026 West Cherry St., Wauwatosa, Wisconsin 53226. 414 257-1555.

STUMP GRINDERS, chippers, log splitters, sprayers, bucket trucks, all reconditioned. Let us know your needs. Essco, 5620 Old Sunrise Hwy., Massapequa, N.Y. 11758. 516 799-7619.

1-60' HI-RANGER, 2-53" Hi-Ranger, 1-Mitts Merril chipper, 2-Prentice loaders, 1-35 g.p.m. John Bean sprayer, 1-10 ton tri-axle trailer, 2-chipper trucks. 414 255-6161 or 354-8730 eve. Allied Enterprises, Inc., W 204 N11509, Goldendale Road, Germantown, Wisc. 53022.

USED HI-RANGER and other bucket trucks, Bombardier muskegs, Asplundh chippers, 100 ft. cranes and smaller and hydro-ax's. Please call or write P. C. Gould Sales Company, Box 178, Essex, Conn. 06426. Phone 203 767-1636.

1970 WHITE TRUCK with 72' Prentice 8T-2 Crane, gas driven, 15 speed road ranger, 16' dump bed. Excellent condition. $39,-500.00. Osborne Tree Service, Mentor, Ohio 44060. 216 255-9109.

USED AERIAL buckets for sale or lease. Used brush chippers, 100 foot Arlo cranes, 35' national crane. Bombardier Muskey $4,000. Call or write Jeff Gould, P. C. Gould Sales Company, Box 178, Essex, Conn. 06426. Phone 203 767-1636.

FOR SALE: 10-1977 Chevy one-ton trucks, 750 gal. spray tanks, R&M 3L4 pump, electric hose reels, spray hose, ready to spray. Phone 513 845-0631.

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WORLD'S FINEST AND BIGGEST tree sprayer, custom built. 1800 gallon oval double wall stainless insulated on C-750 Ford. Air brakes, 60 GPM FMC pump, electric reel. Also Beck Lawn-A-Matic plugger and sprigger, 7 ft. wide, PTO driven. 513 424-2052.

SALE: 48' Skyworker on C-600 Ford, $8,-500.00. 35' bucket on F-600 Ford, $6,500.00. 65' bucket, no truck, $4,500.00. 201 922-9393.

1976 640 HAGIE HI TRACTOR. 50 ft. booms, adjustable tread width, 300 Ford Industrial engine. Excellent condition. $15,000.00 including tandem trailer for transporting. Love's Spraying Service, P.O. Box 410, Delta, Colorado 81416. 303 874-7349.

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BOWIE HYDROSEEDER, 3000 gallon, Detroit diesel engine, mounted on GMC 7500 diesel truck. Excellent condition. $31,000.00. Chattahoochee Plantation, 3850 Berkeley Lake Road, Duluth, Georgia 30136; 404 448-5030.

BEAN 100 mist blower, trailer model. Ford roll-off container truck, 2 boxes, ideal log truck, needs engine. 312 438-5161. McGinty Bros., Inc., Long Grove, Illinois 60047.

1968 FORD K.D. forklift. Gas, 21 foot mast, 4000 pound capacity, motor overhauled in 1978. $5,500. Green Valley Turf Farms, Canfield, Ohio. 216 533-4353.

FOR SALE—8 ft. 3 point hitch Brillion turf grass drill, almost new. 8 ft. disc on rubber tires. Call 316 722-5595 evenings.

USED EQUIPMENT. 3 Stainless steel combines, that aerate, seed, fertilize, roll, etc. Rebuilt, like new, $1800.00 each. 301 833-6221.

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LAWN SEED. Wholesale. Full line of top quality grasses. Improved bluegrass varieties, fine fescues and fine bladed ryegrasses. We specialize in custom mixing. Oliger Seed Company, 2705 Wingate Avenue, Akron, Ohio 44114. Call collect 216 753-2259.

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GOLF COURSE TURF PROFESSIONALS: An opportunity to sell Pro Turf© products. ProTurf Division of O.M. Scott & Sons, the nation's leading manufacturer and marketer of professional turf products, has openings for Technical Representatives in several territories. The Tech Reps selected will call on golf course superintendents, requiring a knowledge of turf management and an understanding of these professionals' needs. Applicant should have a BS degree or equivalent in one of the agronomic sciences. Excellent starting salary plus bonus, automobile, and a comprehensive benefits program at no cost to employees go along with these positions. Send resume in confidence to Dick Stahl, Director of ProTurf, O.M. Scott & Sons, Marysville, Ohio 43040. An equal opportunity employer.

TREE CARE SUPERVISOR: 20-year established tree service company looking for someone experienced, knowledgeable in all aspects of tree care (corrective, sanitary pruning; cabling, bracing, cavity repair, fertilization, spraying/pest control). Applicant should be proficient at climbing techniques, have ability to train new workers in all aspects of tree care/tree removal. Excellent salary offer commensurate with experience. Company benefits (vacation, holiday, paid sick leave, dental, hospitalization plans, company vehicle use.) Please send resume or letter describing education and experience to Lehman Tree Experts, 36 Glen Cove Road, Roslyn Heights, New York 11577.

OPERATIONS FOREMAN. Duties: Responsible for organizing, planning, and supervising the day to day activities of the Park Maintenance Department which includes over 300 acres of park land; two pools, indoor and outdoor; tennis courts; numerous ball fields; four community centers, and administration building. Salary: $13,500-$15,000, plus benefits. Apply to: James DaRosa, Supt. of Parks, Lockport Township Park District, 1911 So. Lawrence Avenue, Lockport, Illinois 60441. Phone: 815 838-1183.

POSITION OPEN for established tree service. Need working foreman and assistant foreman. Must be familiar with all aspects of tree service and equipment. Resume required. Six years experience in climbing and crew supervision required. Good benefits and compensation for qualified persons. Send replys to Jasso Tree Service, Inc., 637 Brown Road, Pontiac, Michigan 48055.

URBAN FORESTRY — Growing tree service is looking for someone to handle our wood processing, land clearance and construction tree protection division. Tree surveying and protection programs. Chicago suburban area. Send resumé and salary requirements to Box 224, Weeds, Trees & Turf, Box 6951, Cleveland, Ohio 44101.

ARBORIST WANTED. Growing tree service is looking for an experienced and hard working arborist to handle our private tree care division. Salary, fringe benefits, company transportation. Chicago suburan area. Send resumé and salary requirements to Box 223, Weeds, Trees & Turf, Box 6951, Cleveland, Ohio 44101.

CONTAINER FOREMAN. Large container grower in New England in need of responsible, mature individuals to carry out area programs in container division. Experience in quality control and other cultural aspects needed. Willing to train in our specialized program. Write to Box 225, Weeds Trees and Turf, Box 6951, Cleveland, Ohio 44101.

EXPERIENCED LANDSCAPE construction foreman needed to take charge of a crew for custom residential and commercial jobs. Must be capable of laying out a job from a plan. Ability to operate a tractor and heavy equipment a plus. Send resume of experience and salary requirements to P.O. Box 22172, Baton Rouge, La. 70893.

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SHADE TREE GROWER. Experienced person versed in the production of large shade trees. Knowledge of growing and harvesting. Requires well-rounded individual strong in horticulture and personnel management, knowledge of harvesting and planting machinery. Northeast location. Please write Box 226, care of Weeds Trees and Turf, Box 6951, Cleveland, Ohio 44101.

FOR SALE

74 CHEVY with 50' Skyworker, chip box, $18,900.00. 6 Cyl. 12" Torque converter reconditioned Mitts and Merrill, $3,300.00. Model 6 Vermeer stump-cutter like new, $2,395.00. 4 Cyl. 12" fully re-conditioned Asplundh, $3,500.00. Asplundh L-45 50' on Chevy dump box fully re-conditioned, 40,000 miles, $13,700.00. 16" Asplundh chipper, needs a motor, $1,700.00. Edwards Tree Service, 49090 Cooper Foster Park, Amherst, Ohio 44001. 216 988-4477.

FOR SALE: 7-gang Roseman hydraulic mower, excellent condition, complete, ready to mount on your 3000 Ford tractor, price $2000.00. 205 821-0969. Beck's Turf-Nursery, P.O. Box 752, Auburn, Ala. 36830.

WIRE STAPLES, 11 guage, 1000 per box, send $21.00 per box, F.O.B., Annapolis, Maryland. Wm. H. Foster Landscaping Company, 10 N. Taylor Ave., Annapolis, Maryland 21401.

MASSACHUSETTS — NEW ENGLAND. 10 year established tree and landscape company. Sell entire business, year round earnings , owner can no longer keep up with business and other interests. Terms cash. House, equipment and all clients. The most respected company in this area. Good business expansion for other companies. Call 617 453-3736 evenings.

6 CYLINDER 12" torque converter, reconditioned Mitts & Merrill, $3,300.00. Model 630 Vermeer stump cutter, like new, $3,995.00. 4 cylinder 12" fully reconditioned Asplundh, $3,500.00. 40' Skyworker on Ford chassis with dump, $5,995.00. 16" Asplundh chipper, needs a motor, $1,700.00. Edwards Tree Service, 49090 Cooper Foster Park, Amherst, Ohio 44001. 216 988-4477.

1974 ASPLUNDH bucket truck on 6500 G.M.C. 55 ft. working height, chip box, side tool boxes with hydraulic tools. Actual miles 9,000, 5 speed transmission, 2 speed rear. One owner one operator. This unit is like new. Asking $25,000.00. 717 393-6710. Lancaster, Pa.

12 foot Dico Side-O-Matic unloading boom complete with forks. Excellent condition, $6000. Green Valley Turf Farms, Canfield, Ohio. 216 533-4353.

73 PRINCETON 4020. Updated frontend and drive wheels 172 Ford industrial. Good shape. $12,000 or best offer. 1 509 863-1261.

VERMEER 671 log chipper. Like new condition. Asking $20,000. Beeler Tree Service, 89 Stilwell Road, Holmdel, N.J. 07733. 201 842-0573.

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WANT TO BUY OR SELL a golf course? Exclusively golf course transactions and appraisals. McKay Golf & Country Club Properties, 15553 N. East St., Lansing, Michigan 48906. Phone 517 484-7726.

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EVENTS

The current issue of WEEDS TREES & TURF carries meeting dates beginning with the following month. To insure that your event is included, please forward it, 90 days in advance, to: WEEDS TREES & TURF Events, 9800 Detroit Ave., Cleveland, OH 44102.

ALCA Erosion Control Symposium, Kansas City, MO, **August 1-3.** Contact Associated Landscape Contractors of America, 1750 Old Meadow Rd., McLean, VA 22102. 703/821-8611.

Illinois Landscape Contractors Assoc. Summer Field Day, Kankakee Nursery, Aroma Park, IL, **August 8.** Contact Carole Rachesky, 665 Forst, Glen Ellyn, IL 60137, 312/858-8574.

Nursery Field Day, Call's Nursery, Sines & Sons Inc., 3756 Call Rd., Perry, OH, **August 9.** Contact Fred K. Buscher, Wooster Area Extension Center, Administration Building, OARDC, Wooster, OH 44691, 216/262-8176.

Canadian Land Reclamation Assoc. Meeting, University of Regina, Regina, Saskatchewan, Canada, **August 13-15.** Contact Janice Siekawitch, Canadian Plains Research Center, CW218, University of Regina, Regina, Saskatchewan S4S OA2, Canada.

Massachusetts Nurserymen's Assoc. Summer Meeting, Shrewsbury Nurseries in Shrewsbury and Bigelow Nurseries in Northboro, MA, **August 15.** Contact Deborah M. Fanning, Massachusetts Nurserymen's Assoc., 715 Boylston St., Boston, MA 02116.

American Association of Nurserymen Management Seminar, Ohio State University, Columbus, OH, **August 19-24.** Contact AAN, 230 Southern Building, Washington, D.C. 20005, 202/737-4060.

USDA Turfgrass Field Day, Beltsville, MD, **August 22.** Contact Jack Murray, Research Agronomist, Field Crops Laboratory, USDA, Beltsville Agricultural Research Center, Beltsville, MD 20705.

Farwest Show of nursery, garden and allied trades, Portland, OR, **August 24.** Contact Dan Barnhart, 503/221-1182.

International Garden Center Annual Congress, Helsinki, Finland, **August 25-Sept. 1.** Package plan cost $925 per person. Other tour options to Russia, Poland, Austria, and Czechoslovakia available. Contact Garden Centers of America, 230 Southern Building, Washington, D.C., 20005, 202/737-4060.

Landscape Contractors Field Day, Fisher Auditorium, OARDC, Wooster, OH, **August 29.** Contact Fred K. Buscher, Wooster Area Extension Center, Administration Building, OARDC, Wooster, OH 44691, 216/262-8176.

Midwest Agricultural Chemicals Association Annual Meeting, Chateau Louise, Dundee, IL, **September 4-6.** Contact Wayman Lipsey, executive director, MACA,

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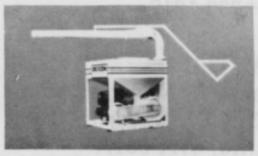

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EVENTS

P.O. Box 113, W. Burlington, Iowa 52655. 319/752-8441.

International Pesticide Applicators Assoc. Annual Convention, Thunderbird Motor Inn, Jantzen Beach, Portland, OR, **September 5-7.** Contact Steve Lind, 17515 S.W. 115th, Sherwood, OR 97140.

Pacific Horticultural Trade Show, Long Beach, CA, **September 6.** Contact Richard Staples, 1419 15th Street, Sacramento, CA 95814. 916/443-7373.

Interior Landscaping Symposium, Bel Air Hilton, St. Louis, MO, **September 19-21.** Contact Associated Landscape Contractors of America, 1750 Old Meadow Rd., McLean, Va 22102. 703/821-8611.

Planning and Budgeting Seminar, Airport Hyatt House, Los Angeles, CA, **Sept. 20-21.** Contact ALCA, 1750 Old Meadow Rd., McLean, VA 22102.

American Mining Congress 1979 Mining Convention, Los Angeles, **September 23-26.** Contact American Mining Congress, Ring Building, Washington, D.C. 20036, 202/331-8900.

Florida Nursery and Allied Trades Show, Florida State Fair Grounds, Tampa, FL, **September 28-30.** Contact FNATS, P.O. Box 16796, Temple Terrace, Florida, 33687, 813/985-8511.

New Jersey Golf Course Superintendents Assoc. Equipment, Irrigation, and Supplies Field Day, Rutgers University Stadium and Golf Course, Piscataway, NJ, **October 2-3.** Contact Dr. Henry Indyk, Rutgers University, Box 231, New Brunswick, NJ 08903, 201/932-9453.

Southern California Turfgrass/Landscape Equipment and Materials Educational Expostion, Orange County Fairgrounds, Costa Mesa, CA, **October 17-18.** Contact Ed McNeill, 1000 Concha St., Altadena, CA 91000, 213/798-1715.

Professional Grounds Management Society 67th Annual International Grounds Management Seminar and Trade Show, Baltimore Hilton, Baltimore, MD, **Oct. 21-24.** Contact Allan Shulder, PGMS, 19 Hawthorne Ave., Pikesville, MD 21208.

Southern Agricultural Chemicals Association Convention, Callaway Gardens, Ga, **October 28-31.** Contact SACA, P.O. Box 686, Dawson, GA 31742.

National Institute on Parks and Grounds Management Annual Educational Conference, Music City, Nashville, TN, **October 28-November 2.** Contact NIPGM, Box 1936, Appleton, WI 54913.

Arborist Workshop, Texas A&M University, **October 29-31.** Contact university, College Station, TX.

Maintenance Symposium, Red Carpet Inn, Milwaukee, WI, **November 6-9,** Contact ALCA, 1750 Old Meadow Rd., McLean, VA 22102.

Wisconsin Park and Recreation Association Annual Conference, Playboy Resort, Lake Geneva, WI, **November 7-8.** Contact WPRA. 8320 W. Bluemound Rd., Suite 211, Wauwatosa, WI 53213.

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RAM I was found growing on the ninth putting green at Webhannet Golf Club in Maine. There it grew vigorously though consistently mowed at ¼". It was selected by Mr. Ernest W. Brown, superintendent, in consultation with Alexander M. Radko, National Research Director, USGA Green Section. The original plant was submitted to Dr. C.R. Funk at Rutgers University for further evaluation and testing. University testing proved this new variety to have superior qualities.

Having been selected and tested by two of the leading turf specialists, RAM I is now brought to you by two leading seed companies.

Available through your nearest Lofts or Jacklin distributor.

Test results available on request.

- Thrives, even in the shade.
- Gives faster spring green-up when compared with other Kentucky bluegrasses.
- Is very competitive against Poa annua even when mowed under 3/4".
- Has improved disease resistance – especially to stripe smut and powdery mildew.

LOFTS

Lofts Pedigreed Seed, Inc.
Bound Brook, New Jersey 08805

Jacklin Seed Company
Route 2, Box 402, Post Falls, Idaho 83854

Circle **148** on free information card

RAM I Kentucky bluegrass is in no way connecte
RAM of the Colgate Sports Groups of Companies